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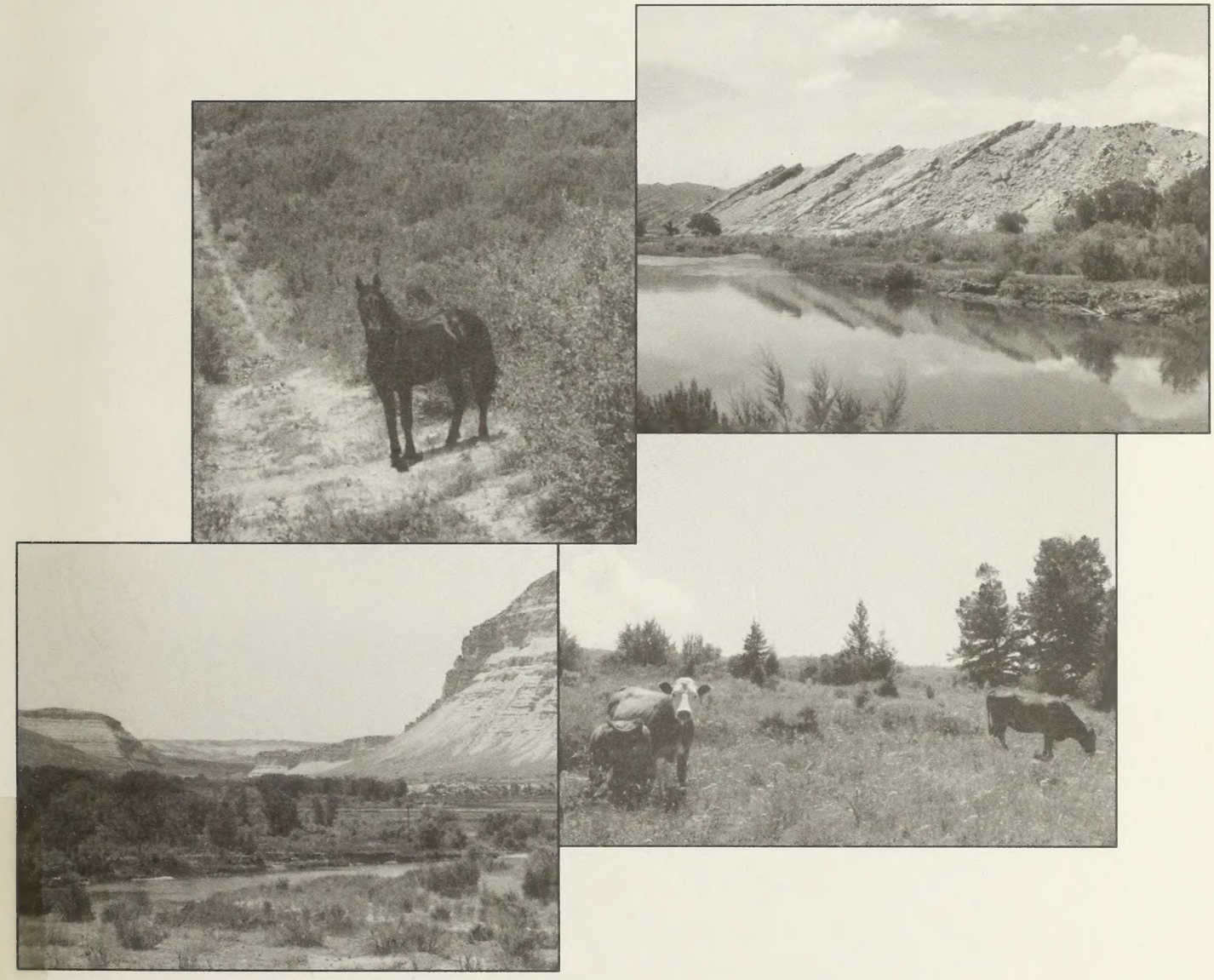
October 1994

WHITE RIVER RESOURCE AREA

DRAFT RESOURCE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
CRAIG DISTRICT OFFICE
455 Emerson Street
Craig Colorado 81625

September 13, 1994

Dear Reader:

This is the White River Resource Area Draft Resource Management Plan (RMP) and Environmental Impact Statement (EIS). This RMP and EIS is being published for your review and comment. Both oral and written comments are invited. Public hearings to receive oral testimony are scheduled at four locations. Dates and times are shown below. Written comments may be sent to the Bureau of Land Management, White River Resource Area, P.O. Box 928, Meeker, Colorado 81641. Written comments must be received by close of business on February 10, 1995.

Public Hearings

Locations	Dates
BLM, White River Resource Area Office, 73544 Highway 64, Meeker, Colorado	January 9, 1995
Ramada West, 11595 W. Sixth Avenue, Denver, Colorado	January 10, 1995
BLM, Grand Junction District Office, 2815 H Road, Grand Junction, Colorado	January 11, 1995
Chevron O&M Building, 100 Chevron Road (5 miles west of Rangely), Rangely, Colorado	January 12, 1995

All hearings will begin at 7:30 p.m. To give you an opportunity to meet with BLM personnel and ask questions about the RMP prior to the hearings, an informal open house has been scheduled from 6:30 p.m. to 7:15 p.m. Please include your name and complete mailing address on all written comments and copies of oral testimony that you wish to give us.

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Sincerely yours,

Robert W. Schneider

Robert W. Schneider
Acting District Manager

Cover Photos: Various Locations in White River Resource Area - photographer, Bob Fowler, BLM
Art Work Bob Fowler, BLM - mountain lion; Randy Reeves, Rocky Mountain College of Arts and Design - lone tree; others unknown

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DRAFT

RESOURCE MANAGEMENT PLAN
and
ENVIRONMENTAL IMPACT STATEMENT

October 1994

Prepared by
United States Department of the Interior
Bureau of Land Management
Colorado State Office
Craig District Office
White River Resource Area

Prepared by: _____ Sept. 13, 1994
Area Manager, White River Resource Area — Date

Recommended by: _____ September 13, 1994
Acting District Manager, Craig — Date

Approved by: _____ 9/23/94
State Director, Colorado — Date

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DRAFT

RESOURCE MANAGEMENT PLAN
and
ENVIRONMENTAL IMPACT STATEMENT

WHITE RIVER RESOURCE AREA

Draft [x] Final [ ]

Lead Agency: United States Department of the Interior, Bureau of Land Management

Type of Action: **Administrative [x]** Legislative [ ]

ABSTRACT

This draft resource management plan (RMP) and environmental impact statement (EIS) describes and analyzes four alternatives for managing the Bureau of Land Management, White River Resource Area. The alternatives are Existing Management (Alternative A), Enhanced Use (Alternative B), Enhanced Natural Values (Alternative C), and Preferred Alternative (Alternative D). This RMP and EIS incorporates some of the decisions made in the *Piceance Basin Resource Management Plan*, the *White River Grazing Management Environmental Impact Statement*, and several other documents. It supersedes the *Piceance Basin Resource Management Plan*, the *White River Management Framework Plan*, and the *White River Resource Area Oil and Gas Environmental Assessment*.

Further Information: B. Curtis Smith
Bureau of Land Management
White River Resource Area
P.O. Box 928
Meeker, Colorado 81641
Telephone: 303-878-3601, Fax: 303-878-5717

Date for Comments: All comments on this RMP and EIS must be received by **February 10, 1995**.

ACRONYMS

ACEC	Area of Critical Environmental Concern
ACMP	Area of Critical Mineral Potential
AIRFA	American Indian Religious Freedom Act
AML	Appropriate Management Level
AMP	Allotment Management Plan
APD	Application for Permit to Drill
AQRV	Air Quality Related Values
AUM	Animal Unit Per Month
BCF	Billion cubic feet
BLM	Bureau of Land Management
BMP	Best Management Practices
BO	Barrels of Oil
Btu	British Thermal Unit
C&MU	Classification and Multiple Use
CDOW	Colorado Division of Wildlife
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CNAP	Colorado Natural Areas Program
CO	Colorado
COA	Condition of Approval
CSU	Controlled Surface Use
DAU	Data Analysis Unit
DEIS	Draft Environmental Impact Statement
DOE	Department of Energy
DPC	Desired Plant Community
DRMP	Draft Resource Management Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Economic Study Area
FLPMA	Federal Land Policy and Management Act
FOOGLRA	Federal Onshore Oil and Gas Leasing Act of 1987
GIS	Geographic Information System
GRA	Geographic Reference Area
HAML	Herd Appropriate Management Level
HMA	Herd Management Area
HMP	Habitat Management Plan
IAP	Integrated Activity Plan
IHICS	Integrated Habitat Inventory and Classification System
KRCRA	Known Recoverable Coal Resource Area
LSRA	Little Snake Resource Area
MCF	One thousand cubic feet
MFP	Management Framework Plan
MPA	Management Priority Area
MOSS	Management (Map) Overlay Statistical System
NEPA	National Environmental Policy Act
NO_2	Nitrite
NOI	Notice of Intent
NRHP	National Register of Historic Places
NPDES	National Pollution Discharge Elimination System

NPS	National Park Service
NSO	No Surface Occupancy
NTL	Notice To Lessees
NWCCOG	Northwest Colorado Council of Governments
NWPS	National Wilderness Preservation System
OHV	Off-Highway Vehicles
ONA	Outstanding Natural Area
PNC	Potential Native Community
POD	Potential of Development
PRLA	Preference Right Lease Area
PSD	Prevention of Significant Deterioration
PV	Prospectively valuable
R&PP	Recreation and Public Purposes Act
RAMP	Recreation Activity Management Plan
RFD	Reasonably Foreseeable Development
RMP	Resource Management Plan
RNA	Research Natural Area
ROD	Record of Decision
ROS	Resource Opportunity Spectrum
RVA	Remnant Vegetative Association
ROW	Right-of-Way
SCS	Soil Conservation Service
SRMA	Special Recreation Management Area
SRP	Special Recreation Permits
SSF	Soil Surface Factor
SWR	Severe Winter Range
T/E	Threatened and/or Endangered
TDS	Total Dissolved Solids
TL	Timing Limitation
TSP	Total Suspended Particulates
USDI	U.S. Department of the Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WAP	Watershed Activity Plan
WRIS	Wildlife Resource Information System
WRRA	White River Resource Area
WSA	Wilderness Study Area
W&SR	Wild and Scenic Rivers
W&SRA	Wild and Scenic Rivers Act

SUMMARY

SUMMARY

INTRODUCTION

The White River Resource Area encompasses 2,675,300 acres of federal, state, and private lands. Of this acreage, BLM administers 1,820,900 acres: 1,0455,900 acres of BLM land, 349,300 acres of federal mineral estate underlying private land, and 15,700 acres of federal mineral estate underlying state lands. This draft resource management plan (RMP) and environmental impact statement (EIS) describes and analyzes four alternatives for managing these lands and minerals. It proposes to incorporate decisions made through earlier land use plans and environmental analysis documents; namely, the 1987 *White River Resource Area Piceance Basin Resource Management Plan and Environmental Impact Statement*, the 1987 *White River Resource Area Coal Amendment to the White River Management Framework Plan*, and the 1981 *White River Resource Area Grazing Management Environmental Impact Statement*. This RMP also proposes management to resolve issues not addressed in earlier land use plans; for example: (1) management of BLM lands near the Dinosaur National Monument, (2) salinity in the Colorado River, (3) oil and gas development throughout the resource area, (4) the spread of noxious and problem weeds, (5) reintroduction of the black-footed ferret, and (6) unrestricted motorized travel throughout the resource area. It also addresses issues that have surfaced since publication of earlier land use documents, such as growing competition for habitat used by wild horses, livestock, and big game.

ALTERNATIVES ADDRESSED IN THIS RMP EIS

Four alternatives are considered in this RMP and EIS. They are (1) Existing Management (Alternative A), (2) Enhanced Use (Alternative B), (3) Enhanced Natural Values (Alternative C), and (4) Preferred (Alternative D). The name given to an alternatives describes the emphasis for the alternative. For the sake of brevity, the alternatives are referred to throughout this document by their letter designations rather than their names. Alternative A, Existing Management, describes management of the White River Resource Area as it exists today and how it would continue to be managed if this alternative were selected. Alternative B, Enhanced Use, describes management of the resource area emphasizing commodity and resource uses with the minimum environmental and natural resource protection required by law. Alternative C, Enhanced Natural Values, describes management of the resource area with an emphasis on protecting the environmental and natural resource values while still accommodating compatible commodity and resource uses. Alternative D, Preferred, describes what is believed to be the more balanced ecosystem approach to resource management.

Table S-1. Summary of Proposed Management Actions and Impacts

Alternative A	Alternative B	Alternative C	Alternative D
Surface Stipulations and Conditions of Approval (COAs) - Surface stipulations to protect sensitive resources, developed through the *White River Resource Area Oil and Gas Umbrella Environmental Assessment* (EA), would continue to be attached to **new** leases for *oil and gas*, where applicable. Surface stipulations in the oil and gas EA would not be attached to **existing** leases. For **existing** leases, mitigation developed through the NEPA process would be attached to applications for permit to drill (APDs), where applicable, subject to valid existing rights. This mitigation is referred to as conditions of approval (COAs).	**Surface Stipulations and Conditions of Approval (COAs)** - Surface stipulations developed through this RMP would supersede those in the oil and gas EA. RMP surface stipulations would be attached to **new** oil and gas leases. RMP surface stipulations would not be attached to **existing** leases. For **existing** leases, mitigation developed through the NEPA process would be attached to applications for permit to drill (APDs), where applicable, subject to valid existing rights. This mitigation is referred to as conditions of approval (COAs).	**Surface Stipulations and Conditions of Approval (COAs)** - Same as Alternative B except for the number of acres subject to RMP surface stipulations:	**Surface Stipulations and Conditions of Approval (COAs)** - Same as Alternative B except for the number of acres subject to RMP surface stipulations:
Surface stipulations in the oil and gas EA **would not be** attached to permits for *other surface-disturbing activities*. Mitigation developed through the NEPA process continue to be attached to permits for *other-surface-disturbing activities*, where applicable.	Surface stipulations in the RMP **would be** attached to permits for *other surface-disturbing activities*. Mitigation developed through the NEPA process also would be attached to these permits, where applicable.		
Surface stipulations in the oil and gas EA are (1) no surface occupancy (NSO) - 19,750 acres, (2) controlled surface use (CSU) - 831,380 acres, and timing limitation (TL) - 591,860 acres.	Surface stipulations in the RMP are (1) NSO - 276,040 acres, (2) CSU - 1,050,120 acres, and TL -331,850 acres.	Surface stipulations are (1) NSO - 1,125,720 acres, (2) CSU - 1,528,230 acres, and TL - 1,631,040 acres.	Surface stipulations are (1) NSO - 148,450 acres, (2) CSU - 1,228,280 acres, and TL - 959,000 acres.
Surface stipulations in the oil and gas EA would protect resources of concern from *oil and gas development* only.	Surface stipulations in the RMP would protect resources of concern from *oil and gas development and also from other types of surface-disturbing activities*.		
Mitigation developed through the NEPA process would protect resources from development of **existing** oil and gas leases and from *other surface-activities* but not as effectively as if applied through the RMP process.	Mitigation developed through the NEPA process would provide additional, more effective protection to resources of concern.		

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Air Quality - Compliance with applicable local, state, and federal air quality laws, regulations, and implementation plans is required. Compliance would minimize emissions from primary emission sources. No areas would be identified near the Dinosaur National Monument (DNM) for State of Colorado visibility impairment analysis prior to the State issuing emissions permits. The potential to impair visibility from incremental development near the DNM Monument would be greater than that under the other alternatives.	**Air Quality** - Same as Alternative A except 13 areas near the DNM would be identified for State of Colorado visibility impairment analysis prior to the state issuing emissions permits on BLM lands. The likelihood of impairing visibility from incremental development near the DNM would be reduced.	**Air Quality** - Same as Alternative B	**Air Quality** - Same as Alternative B
Soils - Surface stipulations developed in the Piceance Basin RMP specifically for soils and other surface stipulations in the oil and gas EA would be attached to *new oil and gas leases,* where applicable. Surface stipulations specifically for soils: 7,200 acres NSO on Baxter/Douglas Pass area, 16,490 acres CSU in soils management priority areas (MPAs).	**Soils** - No surface stipulations developed specifically for soils. Eliminating the soils NSO stipulation on Baxter/Douglas Pass and soils MPA would increase soil erosion in those areas from 1 ton/acre/year to 8 tons/acre/year.	**Soils** - Surface stipulations developed in this RMP specifically for soils and for other resources would be attached to *all surface-disturbing activities*, including new oil and gas leases, where applicable. RMP stipulations specifically for soils: 827,630 acres NSO and 52,000 acres CSU	**Soils** - Same as Alternative C except for the number of acres subject to RMP surface stipulations. Surface stipulations developed specifically for soils: 36,325 acres NSO and 536,000 CSU)
Surface Water - Compliance with state nonpoint source management plan, state water quality standards, and *Clean Water Act* is required. Watershed activity plans would be developed for 15 areas totaling 589,560 acres Sediment and salinity in local streams from BLM authorized actions cannot be quantified. During low flows, increased sediments would be most apparent within the Piceance Creek, Douglas Creek and the White River drainages because of the location of the energy activities.	**Surface Water** - Same as Alternative A except watershed activity plans would be developed for 7 areas totaling 80,910 acres.	**Surface Water** - Same as Alternative A	**Surface Water** - Same as Alternative A

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Groundwater - Some cumulative degradation or alteration of groundwater would probably occur from underground disturbing activities, but most of the disturbances would be localized.	**Ground Water** - Same as Alternative A	**Ground Water** - Same as Alternative A	**Ground Water** - Same as Alternative A
Water Rights - BLM would continue to secure water rights from springs and/or water developments. This would meet the resource area's current and projected future demands for water except for during drought years.	**Water Rights** - Same as Alternative A	**Water Rights** - Same as Alternative A	**Water Rights** - Same as Alternative A
Oil and Gas - Oil and Gas leasing would be subject to surface stipulations developed in the oil and gas EA (see p. S-2). Surface stipulations would increase costs of extraction but would not prevent recovery. Drilling an estimated 50 wells per year over the next 10 to 15 years would yield approximately 86.7 million cubic feet of gas and produce approximately 11.5 million barrels of crude oil. Even though exploration would continue at the above rate, production would decrease approximately 7 to 10 percent yearly.	**Oil and Gas** - Same as Alternative A except oil and gas leasing would be subject to surface stipulations developed in this RMP (see p. S-2).	**Oil and Gas** - Same as Alternative B except for the number of acres subject to RMP surface stipulations (see p. S-2).	**Oil and Gas** - Same as Alternative B except for the number of acres subject to RMP surface stipulations (see p. S-2).
Oil Shale - Oil shale decisions developed through the *Piceance Basin Resource Management Plan and Environmental Impact Statement* would be carried forward into this RMP. Oil shale leasing would be subject to surface stipulations developed in this RMP. Surface stipulations would not make lands unavailable for leasing and development but would likely increase mining costs. The costs would depend on the restrictions necessary to mitigate impacts to an acceptable level and the distance to relocate operations.	**Oil Shale** - Same as Alternative A except for the number of acres subject to RMP surface stipulations.	**Oil Shale** - Same as Alternative A except for the number of acres subject to RMP surface stipulations.	**Oil Shale** - Same as Alternative A except for the number of acres subject to RMP surface stipulations

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Oil Shale continued - Making 223,860 acres available for oil shale leasing and development could produce an estimated 19 to 25.5 billion barrels of kerogen using today's technology.	**Oil Shale continued** - See above	**Oil Shale continued** - See above	**Oil Shale continued** - See above
Sodium - Sodium decisions in Piceance Basin RMP would be carried forward into this RMP. Sodium leasing would be subject to surface stipulations in this RMP. Surface stipulations would not make lands unavailable for leasing and development but would likely increase mining costs. Making 93,210 acres available for sodium leasing could produce approximately 20.2 billion tons of sodium.	**Sodium** - Same as Alternative A except for the number of acres subject to RMP surface stipulations.	**Sodium** - Same as Alternative A except for the number of acres subject to RMP surface stipulations.	**Sodium** - Same as Alternative A except for the number of acres subject to RMP surface stipulations.
Coal - Leasing decisions made in the *Coal Amendment to the White River Management Framework Plan* would be carried forward into this RMP. Coal leasing would be subject to surface stipulations in this RMP. NSO stipulations could preclude surface mining. They would not preclude underground mining but would increase mining costs. The total NSO applies to 2,700 acres (2 percent) of land available for coal. Making 151,170 acres available for further coal leasing would satisfy existing and anticipated future demand for this planning period.	**Coal** - Same as Alternative A except for the number of acres subject to RMP surface stipulations. The total NSO applies to 9,300 acres (6 percent) of land available for coal.	**Coal** - Same as Alternative A except for the number of acres subject to RMP surface stipulations. The total NSO applies to 57,090 acres (38 percent) of land available for coal.	**Coal** - Same as Alternative A except for the number of acres subject to RMP surface stipulations. The total NSO applies to 21,690 acres (14 percent) of land available for coal.
Mineral Materials - RMP surface stipulations would not affect the supply of mineral materials or potential operators because suitable material is available within reasonable distances to markets.	**Mineral Materials** - Same as Alternative A	**Mineral Materials** - Same as Alternative A	**Mineral Materials** - Same as Alternative A

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Locatable Minerals - The potential for locatable mineral development in the White River Resource Area is very low. The possibility of mining claim development is considered to be unlikely.	**Locatable Minerals** - Same as Alternative A	**Locatable Materials** - Same as Alternative A	**Locatable Materials** - Same as Alternative A
Plant Communities - Managing to achieve desired plant communities would result in the following ecological site classifications (acres): Potential natural community (PNC) - 212,050; late-seral communities - 616,490; mid-seral communities - 399,270; early-seral communities - 96,520; unclassified - 131,540	**Plant Communities** - Managing to achieve desired plant communities would result in the following ecological site classifications (acres): PNC - 215,900; late-seral communities - 628,060; mid-seral communities - 383,840; early-seral communities - 96,520; unclassified - 131,540.	**Plant Communities** - Managing to achieve desired plant communities would result in the following ecological site classifications (acres): PNC - 217,090; late-seral communities - 631,630; mid-seral communities - 379,090; early-seral communities - 96,520; unclassified - 131,540 acres.	**Plant Communities** - Ecological site classifications same as Alternative C.
BLM lands would be revegetated with non-native plant species on the following plant community acreage: Pinyon/juniper - 69,075; sagebrush rangelands - 39,180; mountain shrub - 9,200; other - 3,100	Revegetation acres with non-native plant species in: pinyon/juniper - 51,500; sagebrush rangelands - 38,730; mountain shrub - 9,500; other plant communities - 3,100.	Revegetation with non-native plant species - same as Alternative B.	Revegetation with non-native plant species - same as Alternative B.
Forage allocated in the 1981 *Grazing Management Environmental Impact Statement* (EIS) animals would not be reallocated resource area wide. Forage allocations would be reevaluated following completion of the RMP and reallocated, if necessary, to accommodate existing wildlife numbers, which have increased since completion of the grazing EIS.	Forage allocated in the grazing EIS would not be reallocated resource area wide. Forage allocations would be reevaluated during preparation of integrated activity plans (IAPs) and reallocated, if necessary, to accommodate *existing* wildlife numbers, which have increased since allocations were made in the grazing EIS.	Forage allocated in the grazing EIS would not be reallocated resource area wide. Forage allocations would be reevaluated during preparation of integrated activity plans (IAPs) and reallocated, if necessary, to accommodate proposed CDOW big game objectives, which would result in increases from the grazing EIS.	Forage allocation - same as Alternative C.
Noxious and Problem Weeds - Surface disturbance associated with oil and gas development, on- and off-road motorized vehicle travel, oil shale development, additional access, and woodland and timber management would provide potential sites for noxious and problem weed infestations that could ultimately compromise ecosystems.	**Noxious and Problem Weeds** - Same as Alternative A except: Limiting vehicle travel to *existing roads and trails* would reduce the formation of new trails and thus the potential for noxious and problem weed infestations.	**Noxious and Problem Weeds** - Same as Alternative A except: Five weed-free zones would be designated where special precautions would be taken to prevent the spread of noxious and problem weeds. Special precautions in weed-free zones and limiting motorized vehicle travel to *designated roads and trails* would significantly reduce the potential for noxious and problem weed infestations.	**Noxious and Problem Weeds** - Same as Alternative C

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Riparian - An estimated 50 to 75 percent of riparian habitats on BLM lands would be in non-functioning condition. An estimated 85 percent of riparian habitats on BLM lands would be in stable condition.	**Riparian** - An estimated 25 percent of riparian habitats on BLM lands would not have sufficient vegetation cover to function properly. An estimated 75 percent of riparian habitats on BLM lands would improve to proper functioning condition.	**Riparian** - Same as Alternative B	**Riparian** - Same as Alternative B.
T/E and Special Status Plants - T/E and special status plants, although *protected by law*, could be lost accidentally from development or recreation on or adjacent to BLM lands occupied by T/E plants and by vehicles driving off existing roads and trails. Any significant loss of two federally-listed plant species that are not known to occur any where else in the world could jeopardize their existence.	**T/E and Special Status Plants** - Same as Alternative A except motorized vehicles would be limited to existing roads and trails. This would reduce loss of T/E and special status plants. Loss of plants could still occur accidentally from development and from noncompliance with off-road vehicle restrictions.	**T/E and Special Status Plants** - Same as Alternative B.	**T/E and Special Status Plants** - Same as Alternative B
Sensitive Plants and Remnant Vegetation Associations (RVAs) - An NSO stipulation for *known* plant habitat would protect sensitive plants and RVAs, but plants could be lost accidentally from development and by vehicles driving off existing roads and trails.	**Sensitive Plants and RVAs** - Same as Alternative A except motorized vehicles would be limited to existing roads and trails. This would reduce loss of T/E and special status plants. Loss of plants could still occur accidentally from development and by noncompliance with off-road vehicle restrictions.	**Sensitive Plants and RVAs** - Same as Alternative B.	**Sensitive Plants and RVAs** - Same as Alternative B
Timberlands - A total of 19,190 acres would be available for harvest. At a 100-year rotation rate, the annual allowable harvest would be 190 acres/year.	**Timberlands** - A total of 1,450 acres would be available for harvest. At a 100-year rotation rate, the annual allowable harvest would be 14.5 acres/year.	**Timberlands** - A total of 400 acres would be available for harvest. At a 100-year rotation rate, the annual allowable harvest would be 4 acres/year. No harvest program would be pursued.	**Timberlands** - Same as Alternative C
Woodlands - A total of 177,150 acres would be available for commercial harvest. At a 100-year rotation rate, the annual allowable harvest would be 890 acres/year.	**Woodlands** - A total of 146,730 acres would be available for commercial harvest. At a 100-year rotation rate, the annual allowable harvest would be 240 acres/year.	**Woodlands** - A total of 27,600 acres would be available for commercial harvest. At a 100-year rotation rate, the annual allowable harvest would be 45 acres/year.	**Woodlands** - Same as Alternative C

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Livestock Grazing - Decisions made through the 1981 *Grazing Management Environmental Impact Statement* would be carried forward into this RMP. Forage allocations would not change. Existing and proposed surface disturbance would result in a cumulative forage loss of 11,500 AUMs. A total of 6,670 AUMs currently allocated to livestock would be lost. This represents a 5 percent loss in comparison to current livestock grazing levels, or a loss of forage sufficient to sustain 555 cows year-long.	**Livestock Grazing** - Forage allocations made in the grazing EIS would not change. Existing and proposed management (including increases in deer and elk) would result in a cumulative forage loss of 12,130 AUMs. A total of 7,300 AUMs currently allocated to livestock would be lost. This represents a 6 percent loss in comparison to current livestock grazing levels, or a loss of forage sufficient to sustain 608 cows year-long. This is an increased forage loss of 630 AUMs (9 percent) from Alternative A. The greatest losses would occur in GRAs 1,2,3 and 5.	**Livestock Grazing** - Forage allocations made in the grazing EIS would not change. Existing and proposed management (including increases in deer and elk) would result in a cumulative forage loss of 14,884 AUMs. A total of 10,054 AUMs currently allocated to livestock would be lost. This represents a 7 percent loss in comparison to current livestock grazing levels, or a loss of forage sufficient to sustain 550 cows year-long. This is an increased forage loss of 2,754 AUMs (41 percent) from Alternative A. The greatest losses would occur in GRAs 1,2,3 and 5.	**Livestock Grazing** - Forage allocations made in the grazing EIS would not change. Existing and proposed management (including increases in deer and elk) would result in a cumulative forage loss of 11,430 AUMs. A total of 6,600 AUMs currently allocated to livestock would be lost. This represents a 5 percent loss in comparison to current livestock grazing levels, or a loss of forage sufficient to sustain 550 cows year-long. This is a decrease in forage loss of 70 AUMs (1 percent) from Alternative A. The greatest losses would occur in GRAs 1,2,3 and 5.
Wild Horses - A total of 2,100 AUMs of forage would be provided to support 60-140 wild horses. The boundaries of the Piceance-East Douglas Herd Management Area (HMA), containing 161,300 acres, would remain the same. Wild horses would continue to use 18,530 acres of patented oil shale claims (the Boxelder Allotment and Pasture C of the Square S Allotment) that lie within the HMA boundary until or unless the owners of the claims request the horses be removed. The Piceance-East Douglas HMA would be managed to provide 2,100 AUMs of forage for 60-140 wild horses. Wild horses would be removed from the North Piceance (107,590 acres) and West Douglas (190,870 acres) herd areas (HAs). Managing to accommodate 60-140 horses would contribute to near optimum wild horse fecundity.	**Wild Horses** - A total of 1,050 AUMs of forage would be provided to support 60-70 wild horses. The Piceance-East Douglas HMA would be adjusted to exclude 18,532 acres of patented oil shale claims (the Boxelder Allotment and Pasture C of the Square S Allotment). The wild horses on those patented claim lands would also be removed. Removing the 18,532 acres of patented oil shale claims and the horses from the HMA would eliminate potential problems associated with wild horses using lands not under the BLM's jurisdiction. The adjusted HMA would be 146,200 acres. The adjusted HMA would be managed to provide 1,050 AUMs of forage for 60-70 wild horses. Wild horses would be removed from the North Piceance and West Douglas herd areas (HAs). Managing to accommodate 60-70 wild horses would be the lowest population level at which a viable wild horse could be maintained.	**Wild Horses** - A total of 4,800 AUMs of forage would be provided to support 320 wild horses. Piceance-East Douglas HMA - Same as Alternative A except: The HMA would be managed to provide 2,100 AUMs of forage for 90-140 horses. The North Piceance HA and a portion of the West Douglas HA would be designated as the North Piceance HMA and the Texas Creek HMA, respectively. The two new HMAs (148,960 acres) would be managed to provide a maximum 1,950 AUMs for 100-130 wild horses. The remainder of the West Douglas HA (149,500 acres) would be managed to provide 750 AUMs for 0-50 horses. Managing to accommodate 320 horses would improve herd fecundity, genetics, and the desirability of horses for adoption.	**Wild Horses** - A total of 2,100 AUMs of forage would be provided to support 95-140 wild horses. The Piceance-East Douglas HMA would be expanded to include the Greasewood Allotment (28,830 acres) portion of the North Piceance HA. Adding the Greasewood Allotment to the Piceance-East Douglas HMA would eliminate conflicts between wild horses and livestock. The expanded HMA would total 190,130 acres and include the patented oil shale claims. A cooperative agreement to allow wild horses to use the oil shale claims would be pursued with the owner of the claims. The expanded HMA would be managed to provide 2,100 AUMs for 95-140 horses. Wild horses would eventually be removed (the long-term objective) from the remainder of the North Piceance HA and the West Douglas HA. Managing forage to accommodate 95-120 horses would enhance habitat conditions for wild horses and maximize their productivity.

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Big Game - Management may increase winter deer forage by 28%, improve habitat utility on 9% of winter ranges, and improve herbaceous forage on 14% of fall/spring ranges. Improved water distribution would expand suitable summer habitat by up to 15%. Conversely, habitat treatment guidelines may allow land treatments to reduce sagebrush forage by up to 35% on winter range or up to 65% on severe winter range, and increase cover deficient conditions on an additional 10% of winter range. Deer range capacity could be reduced by up to 35% through and beyond plan life. Under reduced population goals (11%), it is likely that long-term habitat conditions for deer would improve, but population productivity and risk of periodic population crashes would remain static.	**Big Game** - Management may increase winter deer forage by 22%, improve habitat utility on 8% of winter ranges, and improve herbaceous forage on 32% of fall/spring ranges. Improved water distribution would expand suitable summer habitat by up to 5%. Conversely, habitat treatment guidelines may allow land treatments to reduce sagebrush forage by up to 20% on general and severe winter ranges and increase cover deficient conditions on an additional 6% of winter range. Treatment guidelines would prevent GRA-wide range capacity impairment. Under reduced population goals (11%), long-term deer habitat conditions (especially woody forage vigor) would improve, but herd productivity and risk of periodic population crashes would remain static through plan life.	**Big Game** - Management would increase winter deer forage by 20%, improve habitat utility on 8% of winter ranges, and improve herbaceous forage on 24% of fall/spring ranges. Improved water distribution would expand suitable summer habitat by a minimum 5%. Integrating habitat treatment guidelines with all land treatment would maintain winter forage sufficient to prevent localized reductions in habitat capacity and optimize big game habitat utility on all project areas. Under reduced deer population goals (18%), improvement in woody forage condition would be attained within plan life. Enhanced habitat utility would establish long term improving trends in habitat condition and herd productivity and help moderate dramatic population fluctuations.	**Big Game** - Management effects on deer, pronghorn and elk populations and habitats would be the same as Alternative C except flexibility within habitat treatment guidelines may allow localized short-term declines in winter forage capacity for deer and pronghorn. GRA-wide ceilings would prevent reductions in overall range capacity. Similarly, guideline latitude may reduce opportunities for optimizing deer habitat utility to levels intermediate between Alternatives B and C (i.e. up to an additional 4% of winter range in cover deficient condition).
Enhanced herbaceous forage and water availability would improve 35% of pronghorn range, but woody forage could be reduced by 35%.	Enhanced herbaceous forage and water availability would improve 40% of pronghorn range. Overall declines in range capacity would be prevented by limiting reductions in woody forage to 20%.	Enhanced herbaceous forage and water availability would improve 41% of pronghorn range. Limiting reductions in woody forage to 10% would prevent localized declines in range capacity.	
Long-term improvements in herbaceous forage would offset forage deficits attributable to elk, but elk use would prolong efforts to reduce grazing intensity and achieve watershed improvement goals.	Increase emphasis on herbaceous community development would fully compensate forage deficits attributable to elk and accelerate achievement of desired grazing use and watershed improvement goals.	Increased emphasis on herbaceous community development and reducing elk populations by 28% would offset additional forage use attributable to elk within plan life. Long-term forage use by elk would not interfere with attainment of desired grazing use and watershed improvement goals.	
Direct habitat losses from land use would be locally pronounced, but insignificant overall. Public use depresses big game habitat utility by an average 10-20%. Localized indirect habitat losses of up to 60% occur on 6% of summer range and 14% of winter range. There is little available control of road proliferation and escalation of indirect big game impacts.	Road density limitations applied to 18% of all big game range would stabilize or slightly increase the effective utility of big game critical habitats and would reduce effective habitat loss in heavy development areas by 50-75% in the long term.	Road density limitations would maintain 70% of big game range utility across a minimum 66% of the resource area.	Road density limitations would affect big game habitats the same as Alternative C.

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Big Game Continued -Timing limitations are ineffective in minimizing disturbance of big game production activities. Severe winter range timing limitations prevent acute animal harassment under the most severe winter conditions, but do not effectively minimize harassment or mortality during prolonged winters.	**Big Game Continued** - Timing limitations would be ineffective in minimizing disturbance of big game production activities. Severe winter range timing limitations would minimize chronic animal stress on ranges hosting up to 55% of the resource area's big game population.	**Big Game continued** -Timing limitations would minimize chronic animal stress and displacement from preferred habitats on all ranges that fulfill special big game functions. Stipulation application would extend to ranges occupied by up to 75% of wintering big game and would maintain functional utility on at least 42% of summer ranges.	**Big Game Continued** - Timing limitations would minimize chronic animal stress and displacement from preferred habitats on a balanced range of habitats that fulfill important year-round big game functions. Stipulation application would extend to ranges occupied by up to 70% of wintering big game and would maintain functional utility on at least 42% of summer ranges.
Non-T/E Raptors - Woodland and timber canopy treatments would reduce woodland raptor nest and foraging habitat capacity by 15% in the short term and 35% in the long term. Long term habitat capacity for raptors and nongame prey associated with mature pinyon-juniper and spruce-fir types (e.g. northern goshawk) would be reduced by 35% and 50%, respectively. Woodland and brush manipulations would increase foraging habitat for soaring raptors by 20% for 50-60 years. NSO and TL stipulations protect ongoing nesting activity, but are incapable of maintaining the integrity of nest habitats for sustained use. Public land uses reduce nest habitat utility by up to 10%. Management-induced enhancement of herbaceous cover conditions would improve the abundance and diversity of non-game prey on up to 25% of grassland/shrubland habitats (soaring raptors) and 27% of woodland habitats (woodland raptors) and may increase nestling survival rates slightly. Similarly, reductions of browse use would enhance structural subcanopy development on up to 36% of pinyon-juniper woodlands.	**Non-T/E Raptors** - Woodland and timber canopy treatments would reduce woodland raptor nest and foraging habitat capacity by 7% in the short term and 25% in the long term. Long term habitat capacity for mature pinyon-juniper and spruce-fir canopy associates (i.e. raptors and nongame prey) would be reduced by 40% and 3%, respectively. Woodland and brush manipulations would increase foraging habitat for soaring raptors by 15% for 50-60 years. NSO and TL stipulations and nest habitat provisions would protect nest activities and maintain known nest habitat utility for extended timeframes. Limiting road densities would stabilize or slightly reduce nest habitat disuse on 20% of woodland, 40% of forest, and 28% of ferruginous hawk and burrowing owl habitats. Management-induced enhancement of herbaceous cover conditions would improve the abundance and diversity of non-game prey on up to 50% of grass and shrub habitats (soaring raptors) and 40% of woodland habitats (woodland raptors). Reductions of browse use would have the same effects as Alternative A.	**Non-T/E Raptors** - Woodland canopy treatments would reduce woodland raptor nest and foraging habitat capacity by about 5% in the short and long term. Long term habitat capacity for mature pinyon-juniper canopy associates (i.e. raptors and nongame prey) would be reduced by 8%. Habitat capacity for spruce-fir and aspen associates would not be affected. Woodland and brush manipulations would increase foraging habitat the same as Alternative B. NSO and TL stipulations, nest habitat provisions, and nest survey requirements would protect nest activities and maintain the utility of suitable nest habitats for extended timeframes. Limiting road densities would stabilize or slightly reduce nest habitat disuse on 80% of woodland and ferruginous hawk and burrowing owl habitats, and 46% of forest habitats. Management-induced enhancement of herbaceous and woody subcanopy development would improve the abundance and diversity of non-game prey on grassland, shrubland, and woodland habitats at levels comparable to Alternative B.	**Non-T/E Raptors** - Same as Alternative C except modified nest survey requirements would reduce nest detection levels and the subsequent use of NSO and TL stipulations and nest habitat provisions. Nest surveys at levels comparable to Alternative C would be gained on an estimated 60 to 70 percent of affected woodland habitats.

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Grouse - Herbaceous cover and forage availability enhancement would occur on 25% of public land grouse nest/brood habitats.	**Grouse** - Herbaceous cover and forage availability enhancement would occur on 63% of public land grouse nest/brood habitats.	**Grouse** - Herbaceous cover and forage availability could be enhanced on 76% of public land grouse nest/brood habitats.	**Grouse** - Through various management schemes, herbaceous cover and forage availability could be enhanced on 80% of public land grouse nest/brood habitats.
Modified sagebrush habitats would reduce sage grouse nesting habitat by 12-37%, and brood and overall range by 13-41% over a 15-20 year period. Treatment of suboptimal sagebrush habitats may expand sage grouse range by 5-10% in the long term.	Modified sagebrush habitats would reduce sage grouse nesting habitat by 12-24%, and brood and overall range by 23% over a 15-20 year period. Habitat guidelines would relegate short term losses to Alternative A's midpoint values and emphasize treatment of suboptimal sagebrush stands. Reestablishing sagebrush on large disturbances would accelerate recovery of grouse nesting and brood cover.	Sagebrush modifications would be the same as Alternative B; however, application of habitat guidelines would relegate short term losses to Alternative A's low to midpoint values. Reestablishing sagebrush on larger disturbances or accumulations of smaller events would accelerate recovery of usable grouse habitat.	Modification of grouse habitats would influence grouse the same as Alternative C. Reestablishing sagebrush cover on larger disturbances would develop sagebrush canopies suitable for year-round grouse use, but does not abbreviate adverse impacts caused by small clumped events.
Woodland harvest would expand blue grouse spring-fall habitats by 4%, but canopy treatments would reduce winter habitats by 8% and 33% in the short- and long-terms, respectively.	Woodland manipulations would not alter blue grouse habitat availability, but canopy treatments would reduce winter habitats by 2-3% and 10% in the short- and long-terms, respectively.	Harvesting 3% of BLM's coniferous forest base would not influence blue grouse winter habitats. Aspen harvests that enhance stand health would maintain or improve 20% of aspen-based blue grouse brood and summer habitats.	Harvesting forest products would influence blue grouse the same as described for Alternative C.
From 11-15% of all grouse nesting habitat would be vulnerable to road-related disturbance.	Road density limitations would reduce the extent of sage grouse nesting habitat vulnerable to disruption by 5%, and would stabilize or reduce road-related disruption on 10-32% of associated nest habitat. Remaining sage grouse nesting habitat would be subject to increases in road-based influence.	Expanding road density limitations would reduce the potential disruption of sage grouse nesting activities by 5% and stabilize at 20% road-related nest disruption on all nest habitat.	Expanding road density limitations would influence sage grouse the same as described for Alternative C.
Application of TL and NSO stipulations may prevent disruption of annual sage grouse breeding activities.	Application of TL and NSO stipulations would maintain annual sage grouse breeding activities, but extending lek protection to important peripheral features would maintain long term lek site characteristics and suitability.	Application of TL and NSO stipulations would maintain annual sage grouse breeding activities and protect lek site character at levels comparable to Alternative B. Application of a nest season TL would allow 68% of nest attempts to succeed within lek complexes.	Limiting road densities and applying TL, NSO, and CSU stipulations would influence grouse the same as Alternative C.
Oil shale and surface coal-mining operations would predispose 5-7% of affected blue and sage grouse range (including 5-11% of available nest and brood range) to long term loss.	Impacts from oil shale and surface coal mining would be the same as Alternative A.	Impacts from oil shale and surface coal mining would be the same as Alternative A.	Impacts from oil shale and surface coal mining would be the same as Alternative A.

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Fisheries - Improvements to aquatic and riparian systems would extend to 50% of Colorado River cutthroat trout habitats (23% of all stream fisheries). Improvements to poor condition fisheries would elevate 45% of all fishery habitats to fair condition. No more than 20% of stream habitats would achieve good fishery conditions. Increased herbaceous ground cover on 30% of the Resource Area would improve adjacent and downstream fish habitat by decreasing upland sediment transport and increasing base flows to all streams. NEPA-derived stipulations designed to minimize or mitigate disruption of channel and floodplain features would maintain habitat conditions and trend. Oil shale development may lead to the loss of >50% of all stream fisheries, including 35% of Colorado River cutthroat trout fisheries.	**Fisheries** - Improvements to aquatic and riparian systems would extend to virtually all stream fisheries. All poor condition fisheries would be elevated to fair condition. Good fisheries conditions would be achieved or maintained on 30-40% of stream habitats. Increased herbaceous ground cover on 55% of the Resource Area would improve fish habitat by decreasing upland sediment transport and increasing base flows to all streams. NEPA-derived stipulations designed to minimize or mitigate physical disruption of habitat features would maintain habitat condition and trend. Localized impacts would persist where road abandonment or restricted vehicle use provide the only means to arrest habitat deterioration. Influences of oil shale development would be the same as Alternative A.	**Fisheries** - Fisheries management would be the same as Alternative B. However, protection standards for virtually all riparian communities, fragile or unstable soils, and Colorado River cutthroat trout habitats would be strengthened such that constant, additive gains toward fishery recovery goals would be achieved. Influences of oil shale development would be the same as Alternative A.	**Fisheries** - Same as Alternative C.
Special Status Wildlife - *Listed Species*: Endangered Species Act processes would remain effective in preventing federal actions from contributing to cumulative declines in threatened and endangered species populations or deterioration of associated habitat.	**Special Status Wildlife** - *Listed Species*: Endangered Species Act processes and special stipulations would provide relatively risk-free protection of listed species activities and habitats.	**Special Status Wildlife** -*Listed Species* - Endangered Species Act processes and special stipulations would provide protection of listed species activities and habitats comparable to Alternative B.	**Special Status Wildlife** - Same as Alternative C

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Special Status Wildlife continued - Riparian improvements and protection would maintain or improve to proper functioning condition about 8% of the White River's designated critical habitat for listed Colorado River fishes, and provide for maintenance of floodplain cottonwood communities as bald eagle habitats along 6% of the White River. Application of timing limitations promotes selection of alternate cottonwood sites as established bald eagle roost and nest sites deteriorate.	**Special Status Wildlife continued** - Riparian improvements and protection would affect the habitat of Colorado squawfish and bald eagle as in Alternative A except, in addition, minimizing suppression of cottonwood regeneration and requiring that, if unavoidably involved, long term floodplain features and function be restored, the long term development and availability of riverine cottonwoods for bald eagle use is encouraged. Potential roost and nest substrate on BLM riverine tracts may increase by 50% in the long term.	**Special Status Wildlife continued**- Riparian improvements and protection would affect the habitat of Colorado squawfish and bald eagle as in Alternative B except White River ACEC designation would better focus and integrate all land use activities toward sustained development and maintenance of floodplain associations and processes. Lease and special stipulations would prevent surface disturbance from impairing floodplain function or riparian expression.	**Special Status Wildlife continued** - Same as Alternative C
Improving herbaceous forage on grass and brushland ranges may enhance the prairie dog prey base on up to 8% of potential black-footed ferret habitat.	Establishment of ferret recovery areas would be preliminary to the establishment of a self-sustaining ferret population. Applied stipulations and road-density limitations within recovery areas would maintain site capacity for ferret reestablishment and reduce the potential for ferret mortality and disruption of reproductive activities. Minimizing disruption of prairie dog systems outside recovery areas would foster maintenance of dispersal corridors and alternate colonization sites. Improving herbaceous forage on grass and brushland ranges may enhance the prairie dog prey base on 52% of potential ferret habitat and increase the extent of suitable habitat by 13% in the long term.	Management of ferret recovery areas would be the same as Alternative B except management emphasis would shift to enhancing, rather than maintaining the capability of the sites for ferret reestablishment. Disallowing land uses that adversely modify the extent or distribution of prairie dog colonies outside recovery areas would assure maintenance of dispersal corridors and intervening habitat for colonization.	
Candidate Species - Applied stipulations deter physical disruption on 50% of BLM's Colorado River cutthroat trout habitats and minimize short term disruption on remaining fisheries sufficient to maintain improving trends at low development	*Candidate Species* - Integrating program management would elevate 96% of Colorado River cutthroat fisheries to fair condition in the short term, and to good condition through plan life. Vegetation treatments would have the same influence on cutthroat fisheries as Alternative A	*Candidate Species* - Colorado River cutthroat trout habitat recovery goals and methods would be the same as Alternative B except application of a lease stipulation within the East Douglas Creek ACEC would limit incompatible short-term watershed disturbance such that the long-term integrity	

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Special Status Wildlife continued - intensity. There are no effective means for controlling incompatible vehicular use or road proliferation in occupied drainages, nor the deterioration of fisheries habitats associated with accelerated sedimentation from road-induced bank, slope and channel instability. Riparian improvements and vegetation treatments promote improved fisheries conditions through small increases in base flow and reduced sediment yield. Extensive spruce-fir canopy treatments in occupied watersheds may induce prolonged channel adjustments deleterious to these fisheries.	**Special Status Wildlife continued** - except canopy manipulations in headwaters would not disrupt channel and flooplain stability. Conditions of Approval and special stipulations would minimize short term physical disruption and maintain improving trends regardless of land use intensity.	**Special Status Wildlife continued** - and development potential of these systems would not be impaired. Conditioning all land use within the ACEC to complement or remain compatible with fisheries recovery objectives would ensure that gains in habitat quality are additive and accelerated improvement is realized through plan life.	**Special Status Wildlife** - See above
Impacts to ferruginous hawk and northern goshawk are integral with the raptor management summary.	Impacts to ferruginous hawk and northern goshawk are integral with the raptor management summary. In addition, maintaining prairie dog populations in ferret recovery areas would maintain important prey elements on 28% of ferruginous hawk habitat hosting 50% of known nesting territories.	Impacts to ferruginous hawk and northern goshawk are integral with the raptor management summary. Management of ferret recovery areas would affect ferruginous hawks the same as Alternative B except that by preventing adverse alteration of prairie dog habitats outside recovery areas, an important prey component of the hawk's would be maintained across all breeding habitat.	
Vegetation manipulations would reduce loggerhead shrike nesting habitat by less than 5%. Plant community improvements may expand suitable nesting habitat by up to 11% in the long term.	Vegetation manipulations would reduce loggerhead shrike nesting habitat by less than 5%. Plant community improvements may enhance prey availability on 82% of occupied habitat and expand suitable nesting habitat by up to 11% in the long term.		
BLM management is ineffective in influencing sharp-tailed grouse populations and habitat, principally because of a limited and highly fragmented land base.	BLM management's influence on sharp-tailed grouse would be the same as Alternative A.	Impacts to loggerhead shrike and sharp-tailed grouse would be the same as Alternative B.	

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Wilderness - As stated in the *Craig District Final Wilderness Environmental Impact Statement* (EIS), Designating Bull Canyon, Willow Creek, and Skull Creek WSAs as wilderness would preserve their solitude, primitive and unconfined recreation, high scenic quality, and naturalness. Nondesignation of Black Mountain, Windy Gulch, and Oil Spring Mountain WSAs would result in the loss of solitude and naturalness.	**Wilderness** - Same as Alternative A	**Wilderness** - Same as Alternative A	**Wilderness** - Same as Alternative A
Wild and Scenic Rivers - No river or stream segments would be recommended for wild and scenic river designation. With or without designation, BLM would manage only the streamside habitat that occurs on BLM land (about 22 percent of stream habitat). With or without designation, the 22 percent of streamside habitat on BLM lands would be managed to protect the free-flowing and outstandingly-remarkable values that resulted in river/stream segment eligibility.	**Wild and Scenic Rivers** - Same as Alternative A	**Wild and Scenic Rivers** - Same as Alternative A	**Wild and Scenic Rivers** - Same as Alternative A
Visual Resources - No BLM lands would be designated as VRM Class I; 460,700 would continue to be designated as VRM Class II; 403,100 acres would continue to be designated as Class III, and 1,415,800 acres would continue to be designated as VRM Class IV.	**Visual Resources** - A total of 41,250 acres would be designated as VRM Class I; 429,000 would be designated VRM Class II; 414,450 acres would be designated VRM Class III; and 1,403,320 acres would be designated as Class IV.	**Visual Resources** - A total of 41,250 acres would be designated as VRM Class I; 434,760 acres would be designated as VRM Class II; 839,170 acres would be designated as Class III; and 146,100 acres would be designated as Class IV.	**Visual Resources** - A total of 41,250 acres would be designated as VRM Class I; 412,250 acres would be designated as VRM Class II; 861,680 acres would be designated as Class III; and 146,100 acres would be designated as Class IV.

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Recreation - The Piceance Basin Special Recreation Management Area (SRMA) (210,000 acres) would provide specific and structured recreation opportunities in a defined area. The White River Extensive Recreation Management Area (ERMA) would provide unstructured and limited recreation opportunities and custodial management for all areas not designated as SRMAs.	**Recreation** - The Piceance Basin SRMA (210,000 acres) would provide specific and structured recreation opportunities. The proposed lower White River/Kenney Reservoir SRMA would provide floatboating, picnicking, wildlife viewing, and camping opportunities on 4,890 acres. The White River ERMA would provide unstructured and limited recreation opportunities and custodial management for all areas not designated as SRMAs.	**Recreation** - The proposed Rangely SRMA would provide mountain biking, boating, fishing, camping, picnicking, and environmental education/study on 410,800 acres. The proposed Black Mountain/Windy Gulch (26,470 acres) SRMA would provide structured opportunities for hunting, horseback riding, hiking, backpacking, wildlife viewing, and nature study. The White River extensive recreation management area (ERMA) would provide unstructured and limited recreation opportunities and custodial management for all areas not designated as SRMAs.	**Recreation** - No SRMAs would be designated. The entire resource area would be an ERMA. The Blue Mountain GRA and the White River ACEC within the White River ERMA would be targeted for hunting, mountain biking, scenic viewing, horseback riding, pleasure driving (Blue Mountain) and floatboating, canoeing, warm-water fishing, and camping (White River).
Motorized Vehicle Travel - Motorized vehicles would be allowed *both on and off existing roads and trails* except in the Blue Mountain road closure area (6,260 acres) and the soils MPAs (16,490 acres). This area would be closed to all vehicles except for those with permitted uses.	**Motorized Vehicle Travel** - Motorized vehicle travel would be *limited to existing roads and trails*. The Blue Mountain road closure area would remain closed to all vehicles except for those with permitted uses.	**Motorized Vehicle Travel** - Motorized vehicle travel would be *limited to designated roads and trails*. The Blue Mountain road closure area, the Oak Ridge State Wildlife Area (9,300 acres), and fragile soils areas (791,300 acres) would remain closed to all vehicles except for those with permitted uses. Additional roads and trails would be closed and rehabilitated or closed during certain seasons. Roads would be constructed and other roads would be closed on an on-going basis, as needed, using the road density criteria listed in Chapter 2.	**Motorized Vehicle Travel** - Same as Alternative C except soils MPAs would not be closed and Coal Oil Basin would be designated as open to both on- and off-road vehicle travel.
Cultural Resources - An unknown number of cultural resources would be destroyed accidentally by surface-disturbing activities. Required cultural resource inventories and surface stipulations (see p. S-2) in this RMP would reduce the loss of significant cultural resources and scientific data. Surface stipulations (NSO) also would reduce the number of inventories conducted, thus	**Cultural Resources** - Same as Alternative A except more acres would be protected by surface stipulations (see p. S-2).	**Cultural Resources** - Same as Alternative A except more acres would be protected by surface stipulations (see p. S-2).	**Cultural Resources** - Same as Alternative A except more acres would be protected by surface stipulations (see p. S-2).

Table S-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Cultural Resources continued - decreasing the amount of information recorded. Increased access and visibility that would increase unauthorized collection and other vandalism.	**Cultural Resources continued** - See above	**Cultural Resources continued** - See above	**Cultural Resources continued** - See above
Paleontological Resources - Although current data are inadequate to quantify the extent or significance of the loss of scientifically-significant fossil resources, the surface stipulations (see p. S-2), including the CSU stipulation that requires inventories in Class I formations prior to approving surface-disturbing activities, would provide protection from disturbance activities.	**Paleontological Resources** - Same as Alternative A except for the acres of surface stipulations (see p. S-2).	**Paleontological Resources** - Same as Alternative A except for the acres of surface stipulations (see p. S-2).	**Paleontological Resources** - Same as Alternative A except for the acres of surface stipulations (see p. S-2).
Land Use Authorizations - Classifying 36,773 acres as avoidance areas and 44,583 acres as exclusion areas would increase development costs for some companies. Since development is not precluded in avoidance areas and exclusion areas are small and/or well scattered throughout the resource area, no projects would be foregone. Designating maximum acreage of formal right-of-way corridors would generally benefit utility companies.	**Land Use Authorizations** - Classifying 69,082 acres as avoidance areas and 97,249 acres as exclusion areas (an increase of 32,309 acres and 52,666 acres, respectively, over Alternative A), would increase development costs for some companies. No projects would be foregone. Designation of the minimum acreage of formal right-of-way corridors may adversely effect utilities by limiting their flexibility in siting future major facilities.	**Land Use Authorizations** - Classifying 1,000,858 acres as avoidance areas and 106,246 acres as exclusion areas (an increase of 964,085 acres and 61,663 acres, respectively, over Alternative A), would increase development costs for some companies. Given the number of acres classified as avoidance and exclusion and considering the potential for increased costs, some projects could be foregone. The lack of designated right-of-way corridors could minimize flexibility in siting future major facilities.	**Land Use Authorizations** - Classifying 187,048 acres as avoidance areas and 106,246 acres as exclusion areas (increases of 150,275 acres and 61,663 acres, respectively, over Alternative A), would increase costs for some companies. Since development would not be precluded in avoidance areas and exclusion areas tend to be located in areas of low demand, few, if any, projects would be foregone. Designation of a minimum acreage of formal right-of-way corridors could limit flexibility in siting future major future facilities. Conversely, having these corridors available would streamline the processing of applications if the corridors would meet the needs of proposed facilities.
Socioeconomics - The cumulative impact on the local economy is likely to be beneficial. The actual impact is localized but not presently quantified.	**Socioeconomics** - The cumulative impact on the local economy is likely to be beneficial. The actual impact is localized but not presently quantified.	**Socioeconomics** - The cumulative impact on the local economy may be slightly negative but not large. The actual impact is localized but not presently quantified.	**Socioeconomics** - The cumulative impact on the local economy may be slightly negative but not large. The actual impact is localized but not presently quantified.

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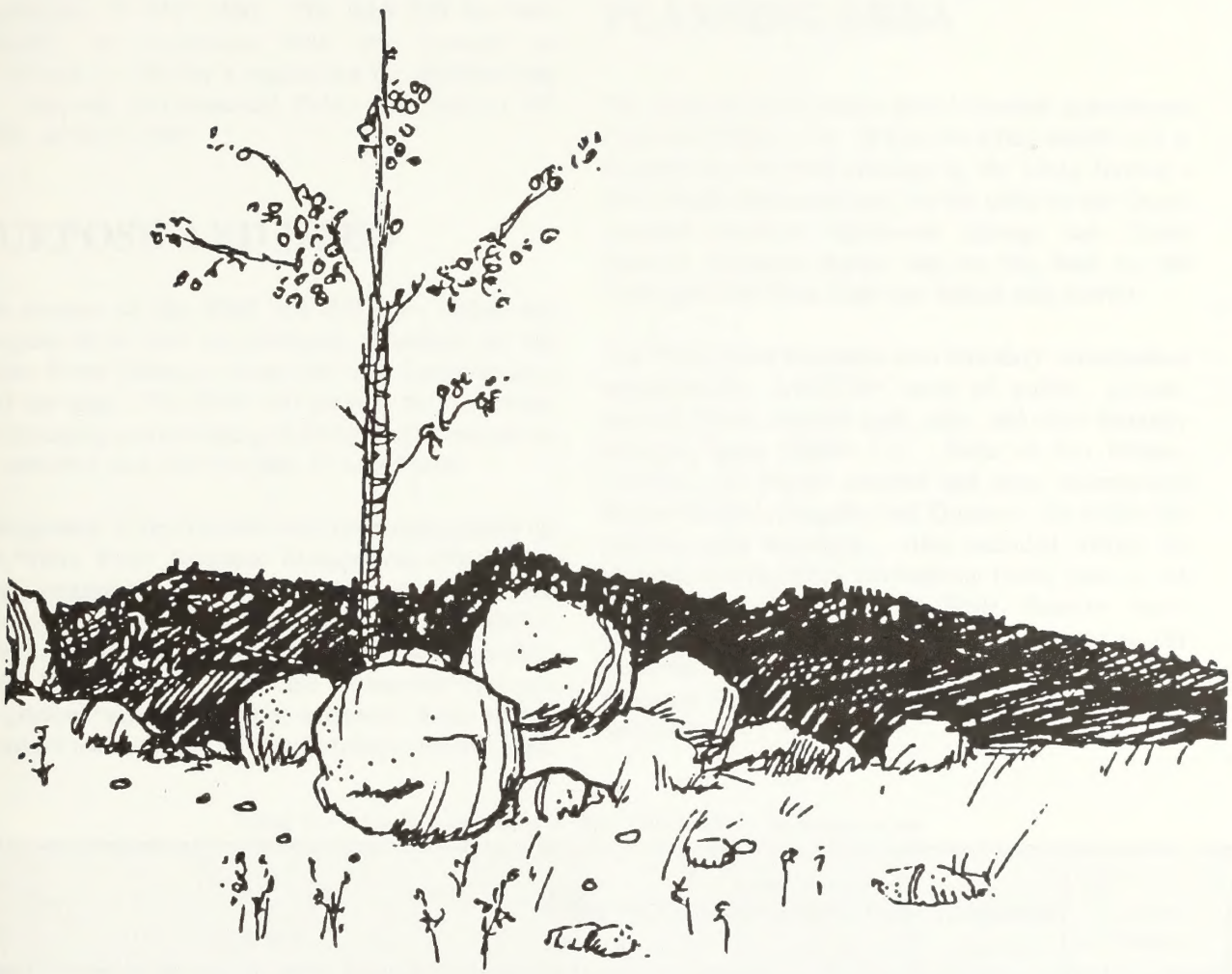
CHAPTER 1
INTRODUCTION



CHAPTER 1
INTRODUCTION

INTRODUCTION

This document consists of a draft resource management plan (RMP) and a draft environmental impact statement (EIS). The RMP has been prepared in accordance with the Bureau of Land Management's (BLM's) planning regulations *43 CFR 1600*. The draft EIS has been prepared in accordance with the Council on Environmental Quality's regulations for implementing the *National Environmental Policy Act* (NEPA) OF 1969, 40 CFR 1500.

PURPOSE AND NEED

The purpose of this RMP and EIS is to update and integrate BLM land use planning documents for the White River Resource Area into one comprehensive land use plan. The RMP will provide the framework for managing and allocating BLM land and resources in the resource area over the next 15 to 20 years.

Management of the resource area is currently guided by the White River Resource Management Framework Plan, completed in 1975 and amended several times, the Piceance Basin RMP, completed in 1987, and several other land use documents such as the coal amendment to the White River Management Framework Plan and the grazing rangeland program summary. Many of the decisions made in these earlier documents are still valid today and have been incorporated into the RMP. Other decisions have been superseded (see Relationship to Documents and Decisions Section, this chapter).

LOCATION OF THE PLANNING AREA

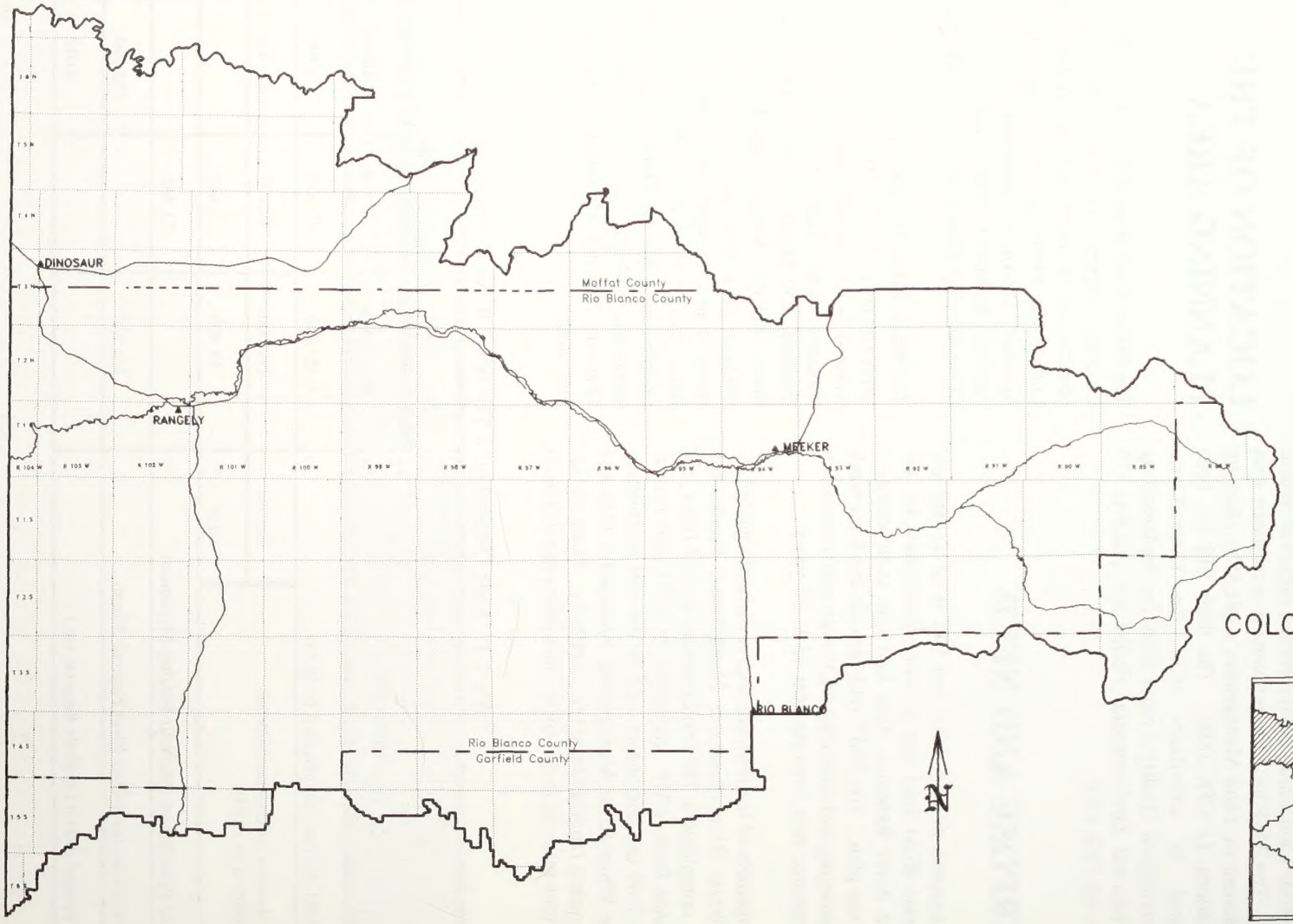
The White River Resource Area is located in northwest Colorado (Figure 1-1). It is in the Craig district and is bounded on the north and east by the Craig District's Little Snake Resource Area, on the south by the Grand Junction District's Glenwood Springs and Grand Junction Resource Areas, and on the west by the Colorado-Utah State Line (see folded map insert).

The White River Resource Area boundary encompasses approximately 2,675,360 acres of public, private, national forest, national park, state, and other federally managed lands (Table 1-1). Parts of Rio Blanco, Garfield, and Moffat counties and three incorporated towns--Meeker, Rangely, and Dinosaur--lie within the resource area boundary. Also included within the resource area boundary are National Forest lands to the east, parts of Naval Oil Shale Reserve lands (administered by the Department of Energy) to the southeast, and part of the National Park Service's Dinosaur National Monument to the north (see folded map insert.)

Table 1-1. Land Ownership in The White River Resource Area

Ownership		Acreage by County			Total Acreage
		Rio Blanco	Moffat	Garfield	
BLM land (Surface Administered by BLM)		1,153,200	232,800	69,900	1,455,900
BLM Minerals (Subsurface Minerals Administered by BLM)	Private	231,900	55,100	62,300	349,300
	State	14,400	1,300		15,700
National Park Service (Dinosaur National Monument)			71,480		71,480
U.S. Forest Service (White River National Forest)		246,800		128,800	375,600
Other Federal (Naval Oil Shale Reserve, etc.)				4,010	4,010

WHITE RIVER RESOURCE AREA



COLORADO VICINITY MAP

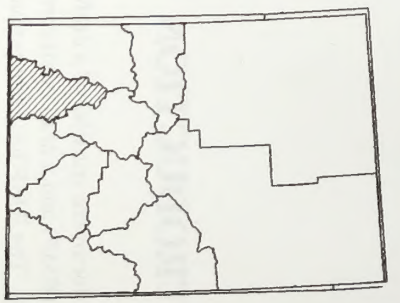


FIG. 1–1

Table 1-1. Continued

Ownership	Acreage by County			Total Acreage
	Rio Blanco	Moffat	Garfield	
State Land (Division of Wildlife (DOW), Parks, Land Board)	23,600	19,140	320	43,060
Private Land	253,650	43,740	62,860	360,260
Totals	1,923,550	423,560	328,190	2,675,300

Of the 2,675,300 acres within the resource area boundary, 1,455,900 acres are federal surface administered by BLM. Federal minerals administered by the BLM underlie another 365,000 acres of other surface ownership (see Map 1-1) (Note: All maps have been placed in Volume 2). The decisions arrived at in the RMP will apply only to those lands and minerals administered by the BLM and to the Naval Oil Shale Reserve lands if the U.S. Congress passes a pending bill to transfer administration of Naval Oil Shale Reserve 1 to BLM.

THE PLANNING PROCESS

The BLM planning process is designed to accommodate the issues and concerns of the public while complying with the laws and policies established by Congress and the Department of the Interior (DOI). The process includes several mandated steps as shown in Figure 1-2.

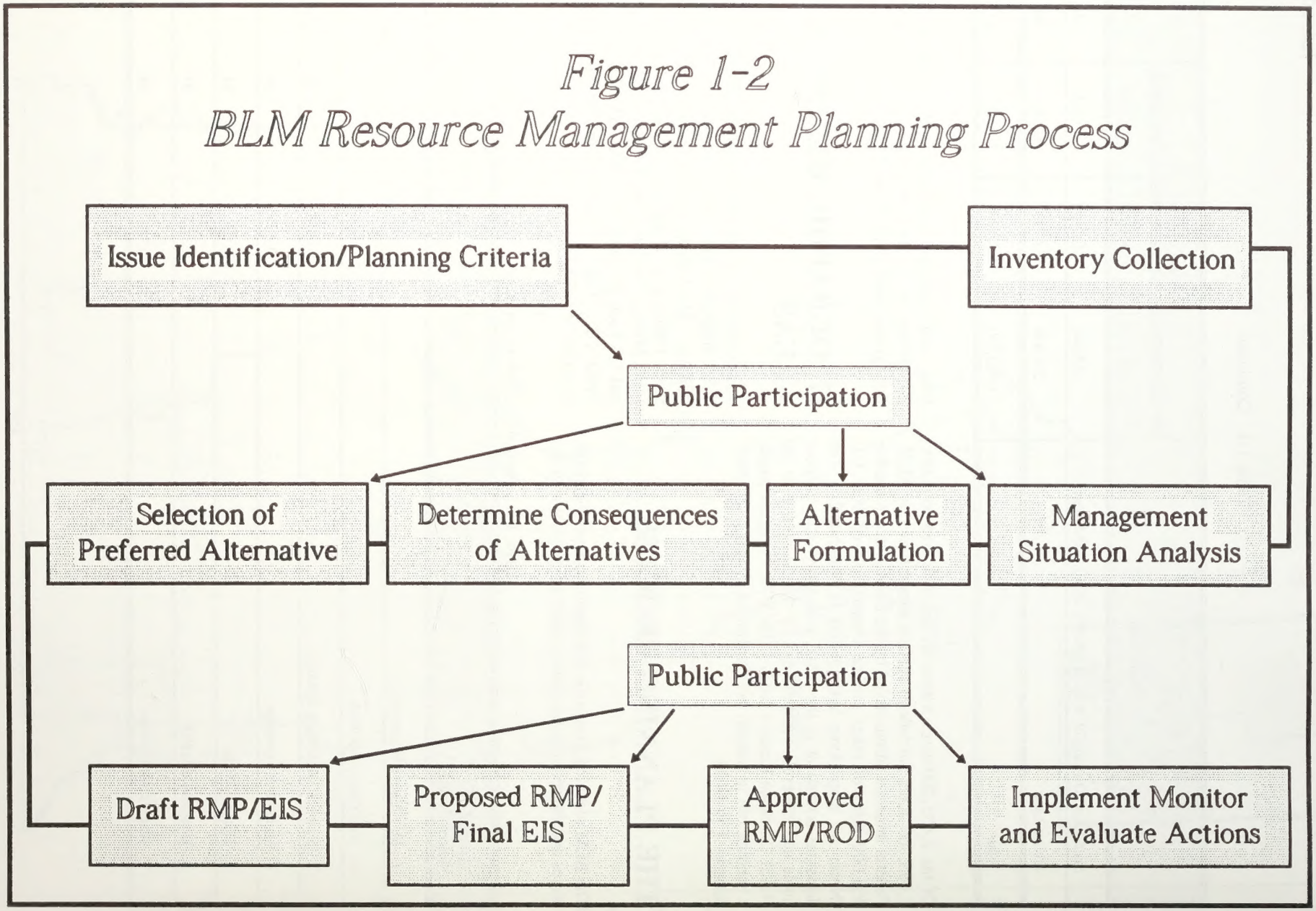
GEOGRAPHIC REFERENCE AREAS

For descriptive and analyses purposes, the resource area has been delineated into seven geographic reference areas (GRAs). The GRAs give the reader a point of reference when referring to a specific location within the resource area. Most of the data needed for analyses was gathered by and has been presented by GRA. The GRAs are listed in Table 1-2. Map 1-2 and the folded map insert shows locations of GRAs.

Table 1-2. Geographic Reference Areas

Geographic Reference Area	Acres of BLM and Split Estate (SE)	BLM and SE as Percent of GRA
1. Blue Mountain/Moosehead	150,200	81
2. Wolf Creek/Red Wash	212,264	87
3. Crooked Wash/Deep Channel	141,800	80
4. Danforth Hills/Jensen	173,600	60
5. Piceance Basin	672,000	84
6. Douglas/Cathedral	452,000	97
7. White River Corridor	16,700	30

Figure 1-2
BLM Resource Management Planning Process



INTERATED ACTIVITY PLAN AREAS

Additional planning will be needed to implement many of the management proposals described under the various alternatives. This additional planning is referred to as activity planning. Activity plans generally describe the specifics needed to carry out the broader decisions in a land use plan.

In the past, several individual activity plans have been prepared for the same piece of ground. For example, a habitat management plan (HMP), an allotment management plan (AMP), a recreation activity management plan (RAMP), and a forest management plan (FMP) might be prepared in a given area. Although resources other than the one for which the plan is written are considered and other resource specialists are consulted, the primary emphasis in an individual activity plan is managing the single resource or program. To take a more ecosystem management approach to activity planning, this RMP has delineated integrated activity plan (IAP) areas (Table 1-3). One IAP that considers detailed management for all the resources present in an IAP area will be prepared following approval of the RMP. Each IAP will concentrate on the entire landscape within the IAP area. Partnerships with all land owners and public users will be pursued. Map 1-3 shows the areas that have been delineated for integrated activity planning. It also shows the priorities for IAP development. The priorities could be changed by the area manager. IAP areas should not be confused with geographic reference areas (GRAs). GRAs are used in this document for reference and analysis purposes only. IAPs are areas where additional site-specific planning will be conducted following approval of the RMP.

Table 1-3. Integrated Activity Plan Areas

Priority for Development/IAP Name	BLM and Split-Estate Acres	Issue or Concern
1. Douglas Creek	291,400	Competition for forage among livestock, big game, and wild horses; oil and gas development; motorized vehicle travel; protection of historical/cultural resources; riparian values; protection of candidate T/E fish, paleontological resources, and T/E plants; effects of development on problem soils and water quality; recreation near Rangely; biodiversity, acquisitions, fire
2. Blue Mountain	231,700	Effects of BLM management on Dinosaur National Monument (DNM) values and vice-versa; recommended designation of three wilderness study areas (WSAs); grouse/elk; riparian values; reintroduction of black-footed ferret; control of noxious weeds and rehabilitation of disturbed sites with non-native vegetation; acquisitions; paleontological/cultural resources; protection of visual resources; salinity; DNM watershed concerns; coordinated recreation management with DNM; motorized vehicle travel; use of Harper's Corner Road; fire (limiting acres burned, coordinating with DNM); livestock grazing; DNM/BLM land adjustments; biodiversity
3. Square S	128,600	Competition for forage among livestock, big game, and wild horses; oil shale/oil and gas/sodium development; oil shale exchanges; grouse/big game; expansion of wild horse herd; riparian values; biodiversity; water quality and surface water; paleontological/cultural resource values; protection of T/E plants; agricultural trespass; access.
4. Yellow Creek	142,400	Vegetation management, oil shale/oil and gas/sodium development; oil shale exchanges; grouse/big game, wild horses, livestock; riparian; biodiversity; water quality; surface water; paleontological/cultural resources; protection of T/E plants; agricultural trespass; access;
5. White River	31,450	Access; recreation; bald eagles; biodiversity; riparian values; protection of T&E plants and remnant vegetation associations; wild and scenic river suitability; acquisitions; Beefsteak Gulch and WSA; watchable wildlife; scenic byway; sheep trail; in-stream flows; noxious weeds; agricultural trespass
6.Evacuation Creek	83,030	Protection of T/E and sensitive plants; access; salinity; paleontological/cultural resources; motorized vehicle travel; vegetation; fire; coal/oil and gas development; riparian; livestock; sheep trail; R/W corridor; biodiversity

Table 1-3. Continued

Priority for Development/IAP Name	BLM and Split-Estate Acres	Issue or Concern
7. Colorow	69,100	Coal/oil and gas development; access; recreational fisheries/candidate T/E fish; disposal of BLM lands; motorized vehicle travel; big game; riparian; recreation; aspen; acquisitions; livestock; agricultural trespass; biodiversity
8. Little Hills	116,500	Vegetation management; oil shale/oil and gas/sodium development; big game management; livestock; riparian; biodiversity; water quality and surface water; paleontological/cultural resources; protection of T/E and sensitive plants; agricultural trespass; access; oil shale exchanges
9. Crooked Wash	65,650	Biodiversity; livestock grazing; oil and gas development; recommended nondesignation of WSAs; motorized vehicle travel, vegetation; access, protection of T/E and sensitive plants; riparian; paleontological/cultural values; big game/grouse; R/W corridor; recreation; agricultural trespass
10 Cow Creek	47,430	Vegetation management; oil shale/oil and gas/sodium development; grouse/big game; wild horses; livestock; riparian; biodiversity; water quality and surface water; paleontological/cultural resources; protection of T/E, sensitive, and remnant vegetation associations; agricultural trespass; access; oil shale exchanges

ISSUES AND MANAGEMENT CONCERNS ADDRESSED IN THIS RMP

At the beginning of this planning process, tentative issues, management concerns, and valid existing management were identified. These issues and concerns were then taken to the public for their review and comment. The public comments were then analyzed to determine which issues and management concerns would or would not be considered in the RMP. After public comments were received, planning criteria were developed for each issue or concern. Planning criteria are the constraints or ground rules that are developed to guide and direct the resource management plan. The criteria are based on standards described by: laws, policy, and regulations, guidance from the Colorado State Director, public input, results of consultation and coordination with other agencies and governmental entities, analysis of information pertinent to the planning area, and professional judgment.

The planning issues and management concerns and the planning criteria defined for each issue and management concern are listed below:

PLANNING ISSUES

A planning issue is defined as a matter of controversy or dispute involving a resource management activity or land use that can be well defined and possesses a range of management alternatives from which to choose. Planning issues are listed in Table 1-4.

Table 1-4. Planning Issues and Planning Criteria

Issue	Planning Criteria
Oil and Gas Leasing	1. Identify lands eligible for leasing through application of laws and regulations. 2. Assess the ability of the land to incur oil and gas development and the availability of the resource for development. 3. Compare the public values of oil and gas development with public values of other existing and future alternative uses which may be precluded or impacted. 4. Identify the impacts of lease stipulations on oil and gas leasing and development.
Wild Horse Management	1. Identify critical use levels which will not be exceeded and criteria that might guide adjustments among consumptive uses. 2. Identify constraints which will be required on other resources to protect the integrity of the herd management area.
Black-Footed Ferret Reintroduction	1. Identify areas that are suitable for reintroduction. 2. Identify protection measures that would be required after reintroduction. 3. Identify resources that would be impacted by reintroduction.
Recreation Management	1. Determine what future recreation demands may be. 2. Identify and locate the potential for recreation opportunities. 3. Assess intensity of recreation management and the impacts of recreation on other resources and uses. 4. Identify constraints on recreation activities.
Wild and Scenic River Eligibility	1. Identify free-flowing stream segments with outstandingly remarkable values that may be present. 2.Determine potential classification of eligible segments as wild, scenic, or recreational. 3. Identify interim management guidelines for segments which may be determined eligible. 4. Provide a suitability or nonsuitability recommendation on eligible segments and describe the basis and rationale for this recommendation.
Special Management Areas	1. Identify general management objectives and strategies for each special management area. 2. Identify constraints on development and use of these areas. 3. Identify the areas as warranting national or international recognition if they meet the criteria for National Natural Landmark, Man and the Biosphere, World Heritage, or area of critical environmental concern (ACEC) designations.
Motorized Vehicle Travel	1. Identify the general location of the areas being considered for designation. 2. Establish the type of designation or restrictions to be applied. 3. Analyze the reason or reasons for restrictions and designations. 4. Identify general management guidelines. 5. Identify the effect on private property rights.
Public Access	1. Identify areas which need public access acquired. 2. Assess benefits that would accrue to the public from securing public access. 3. Determine methods of access acquisition. 4. Assess the impacts of gaining public access on other resources and uses.
Land Ownership Adjustment	1. Identify location, resource values, and manageability of land for disposal or acquisition. 2. Identify the legal authorities under which the lands may be conveyed. 3. Establish the conditions needed to allow conveyance. 4. Establish the management objectives to be served by adjusting land ownership. 5. Identify the withdrawals to be modified or revoked in support of these actions.

MANAGEMENT CONCERNS

Management concerns are resource management activities or land uses that need to be considered throughout the planning process. These activities generally do not have significant controversy or dispute associated with them, but must be addressed in order to provide a comprehensive land use plan that complies with the BLM's legal mandates. Management concerns are listed in Table 1-5.

Table 1-5. Management Concerns and Planning Criteria

Management Concern	Planning Criteria
Water and Watershed Management	1. Comply with the State of Colorado Water Laws in securing water rights. 2. Identify critical watersheds. 3. Determine management practices best suited to meet watershed objectives in critical watersheds.
Salinity/Upper Colorado River Basin	1. Identify the best management practices to reduce salt transportation. 2. Identify the areas adding salts to the system. 3. Determine base levels of salinity for the resource area.
Sodium Leasing	1. Determine if the public demand is sufficient to allow sodium leasing during the life of the RMP. 2. Determine where sodium leasing should be allowed. 3. Determine what lease stipulations need to be applied to protect other resources including oil shale, water (surface and ground), and surface uses.
Riparian Management	1. Identify objectives in riparian management. 2. Identify riparian areas needing special management due to condition. 3. Determine what management practices will be available. (d) Identify impacts to other resources from riparian management. 4. Identify cooperation opportunities for achieving riparian objectives. 5. Assess impacts of other resource uses upon riparian values.
Vegetation Management	1. Identify by area the seral stages that would best meet resource objectives. 2. Identify the methods of management that are available to achieve the desired results. 3. Identify plant species and location where control needs to be implemented. 4. Determine acceptable methods of control.
Wildlife Management	1. Identify populations and population dynamics which need special management. 2. Determine which management techniques are available to best accomplish habitat management goals. 3. Determine what stipulations need to be applied to protect wildlife values.
Timberlands and Woodland Management	1. Identify the types of forest and woodland management practices best suited for the resource area. 2. Classify forest and woodland types for production capability and suitability. 3. Determine allowable harvest level.
Cultural, Historical, and Paleontological Resource Management	1. Identify resources potentially valuable for National Registry nomination. 2. Identify areas containing values that may require protection. 3. Identify areas where monitoring would be required for surface disturbing activities.
Fire Management	1. Identify the level of fire management needed for the resource area. 2. Identify the criteria to be used to establish prescriptions for fire management.

RELATIONSHIP TO OTHER DOCUMENTS AND DECISIONS

This RMP incorporates decisions or supersedes decisions of nine existing planning documents in the White River Resource Area.

WHITE RIVER RESOURCE AREA MANAGEMENT FRAMEWORK PLAN

The White River Management Framework Plan (MFP), completed in 1975, covers the entire resource area. The MFP has been updated and amended several times. Certain decisions in the MFP have been carried forward into this RMP. These decisions are reflected in Alternative A, Existing Management (No Action). The decisions made in this RMP will supersede the decisions in the MFP.

GRAZING MANAGEMENT PROGRAM

In 1980, a rangeland management program and environmental impact statement was completed for the White River Resource Area. This document identified the overall management of the grazing program and directed the preparation of allotment management plans to implement those decisions. The decisions and projected implementation has been incorporated into this RMP.

COAL AMENDMENT

The Coal Amendment to the White River MFP, completed in 1981, examined lands within the resource area that had high to moderate potential for coal development. A determination was made on the suitability of the areas having development potential. Areas found suitable were available for further consideration for leasing and development. The decisions made in the 1981 amendment have been carried forward into this RMP; although, some of the decisions have been modified.

PICEANCE BASIN RESOURCE MANAGEMENT PLAN

The Piceance Basin RMP, approved in May 1987, made land use decisions for the Piceance Basin Planning Area. The Piceance Basin Planning Area comprises 804,580 acres of land in the southeast part of the White River Resource Area, primarily within Rio Blanco County. The original intent of the Piceance Basin RMP was to delineate oil shale tracts and make decisions regarding a long-term commercial oil shale leasing program. Ultimately, the BLM State Director decided to change the scope of the RMP so that oil shale lease tracts would be delineated after rather than before completion of the RMP. Decisions in the Piceance RMP superseded those made in the MFP for the same piece of geography. Many of the decisions made in the Piceance RMP are still valid and are incorporated into this RMP, Alternative A, Existing Management (No Action). These decisions, where appropriate, are also included in Alternative D, Preferred Alternative. The management priority area (MPA) concept in the Piceance Basin RMP, which tended to polarize differing interest groups, was dropped in this RMP.

OIL AND GAS LEASING UMBRELLA ENVIRONMENAL ASSESSMENT

A comprehensive management program for oil and gas leasing developed in an "umbrella" oil and gas leasing environmental assessment (EA) is currently used in leasing federal oil and gas resources. The process of approving applications for permit to drill, rights-of-way, exploration, and development of oil and gas was formalized and made consistent in the EA in an effort to minimize surface-disturbing activities caused by development. Stipulations were established for site-specific activity throughout the resource area. The decisions made in the RMP will supersede those in the

oil and gas leasing umbrella environmental assessment.

NORTHWEST COLORADO COAL PREFERENCE RIGHT LEASE APPLICATIONS ENVIRONMENTAL IMPACT STATEMENT

This environmental impact statement (EIS) analyzed the impacts of leasing coal on two tracts of land in the resource area through the coal preference right lease application (PRLA) process. The PRLAs are known as Chapman-Riebold and Jensen-Miller. The final EIS was completed in January 1989. The Chapman-Riebold PRLA has been rejected. The Jensen-Miller PRLA is still under review. The record of decision for the Jensen-Miller PRLA will be based on the final showing. The analysis and final decision will be accepted as valid. The two PRLAs are, therefore, not analyzed in this RMP/EIS.

JAMES CREEK COAL PREFERENCE RIGHT LEASE APPLICATION ENVIRONMENTAL IMPACT STATEMENT

James Creek EIS and Plan Amendment analyzed the environmental impacts of a coal preference right lease application located about 9 miles northeast of Meeker, Colorado. The final EIS was completed in February 1989, and the record of decision and lease decision will be based on the final showing presented by the applicant. The analysis and final decision will be accepted as valid. The PRLA is not analyzed in this RMP.

CRAIG DISTRICT FINAL WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

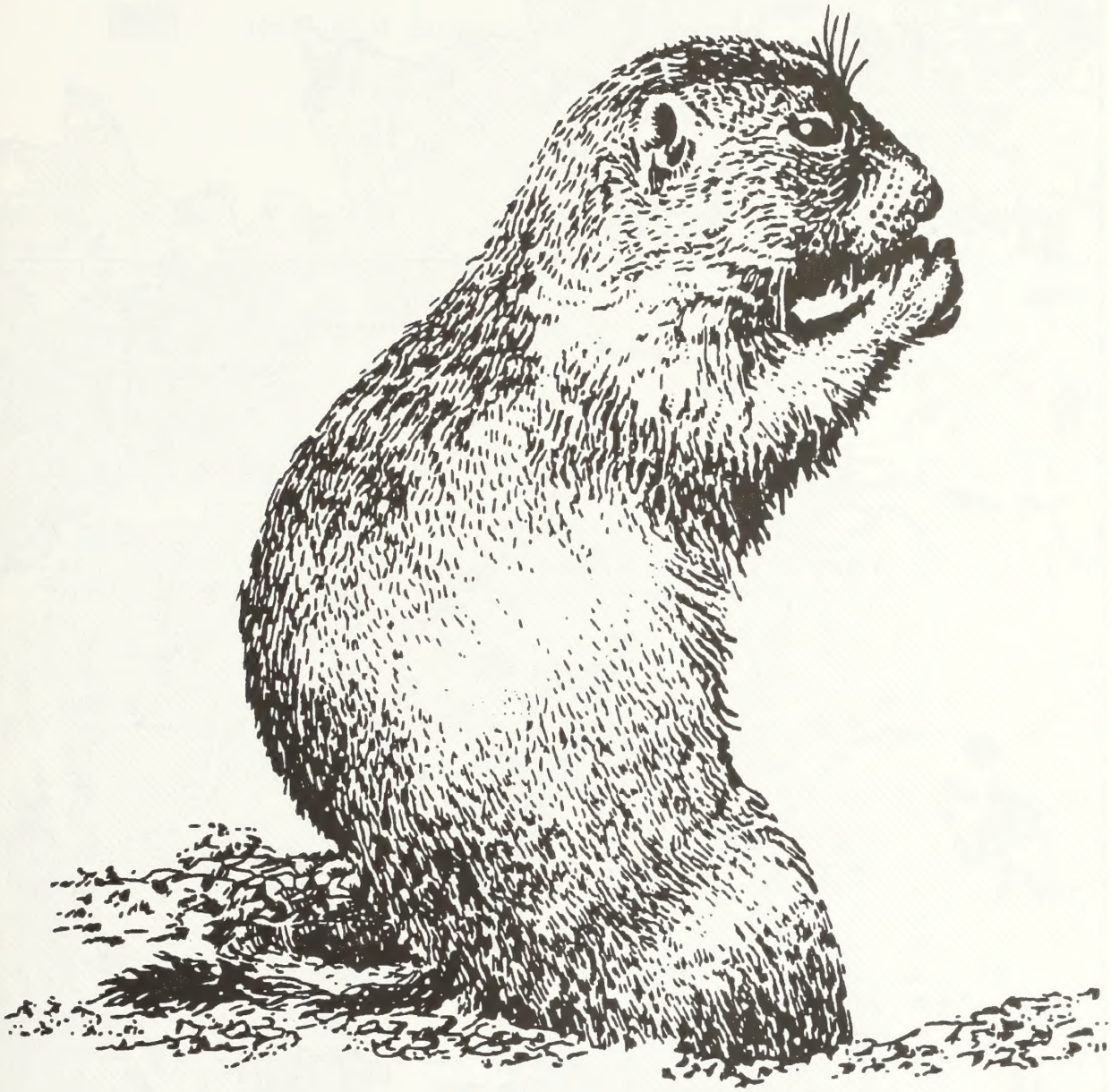
The final wilderness EIS, published in 1990, analyzed the impacts of designating or not designating as wilderness all or certain portions of six wilderness study areas (WSAs) in the White River Resource Area.

The final wilderness EIS impacts have been incorporated into this RMP by reference.

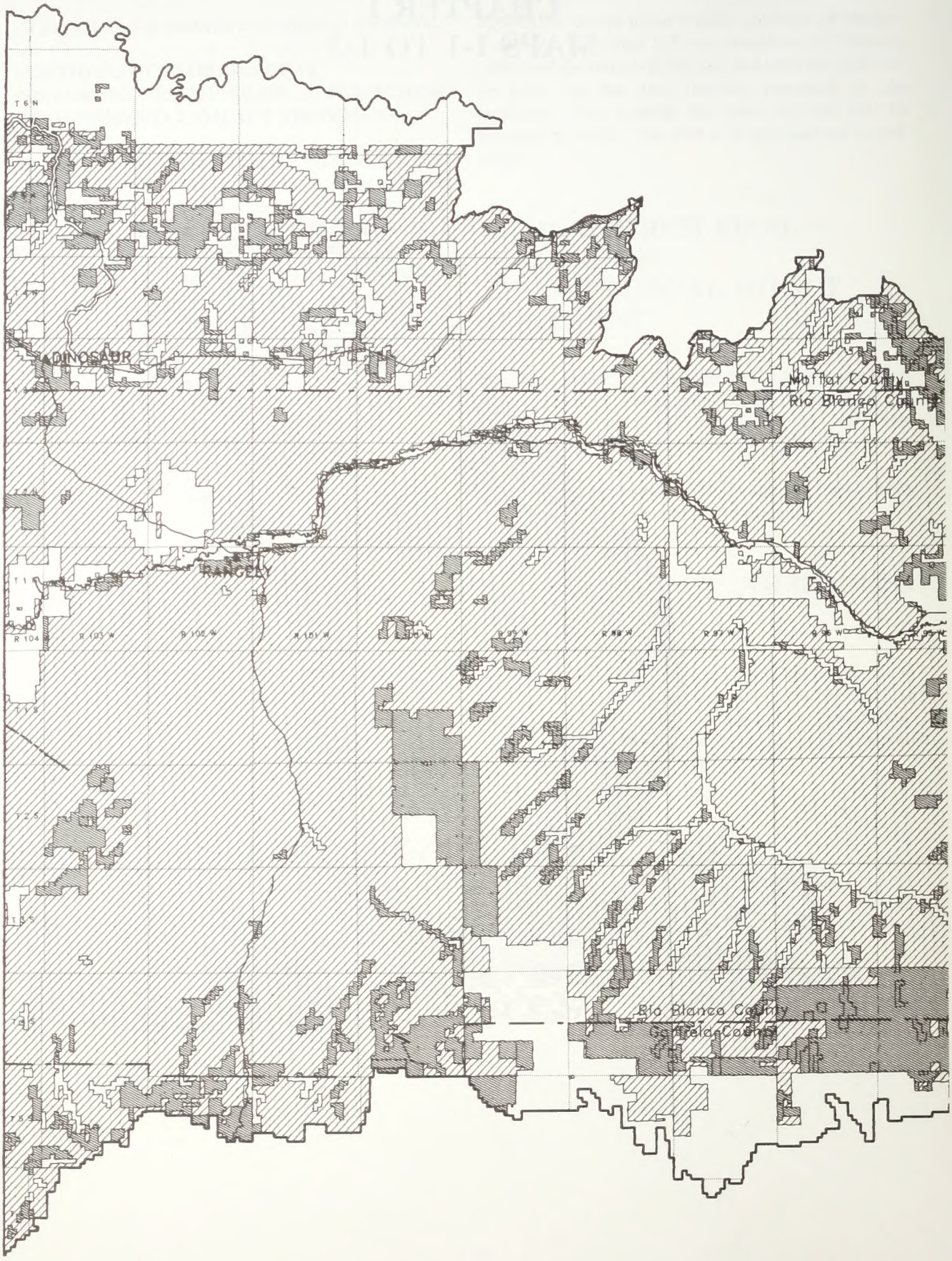
CRAIG DISTRICT WILDERNESS STUDY REPORT

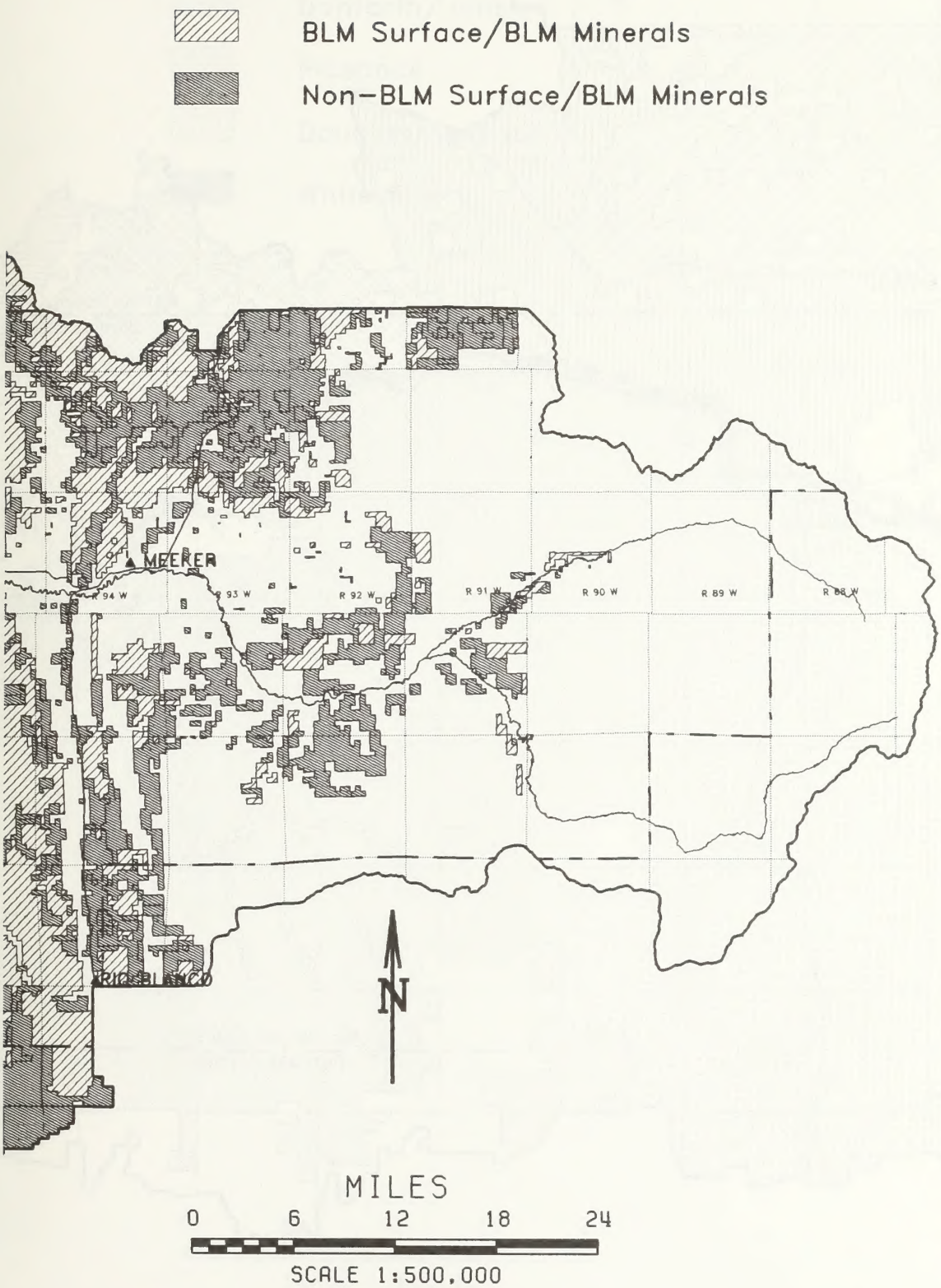
The Craig District Wilderness Study Report, completed in October 1991, recommended three of the six wilderness study areas for wilderness designation. These recommendations have been carried forward into all alternatives in this RMP.

CHAPTER 1
MAPS 1-1 TO 1-3



MAP 1–1. SURFACE AND SUBSURFACE BLM ADMINISTRATION




BLM Surface/BLM Minerals
Non-BLM Surface/BLM Minerals
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R 91 W
R 90 W
R 89 W
R 88 W
N
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12
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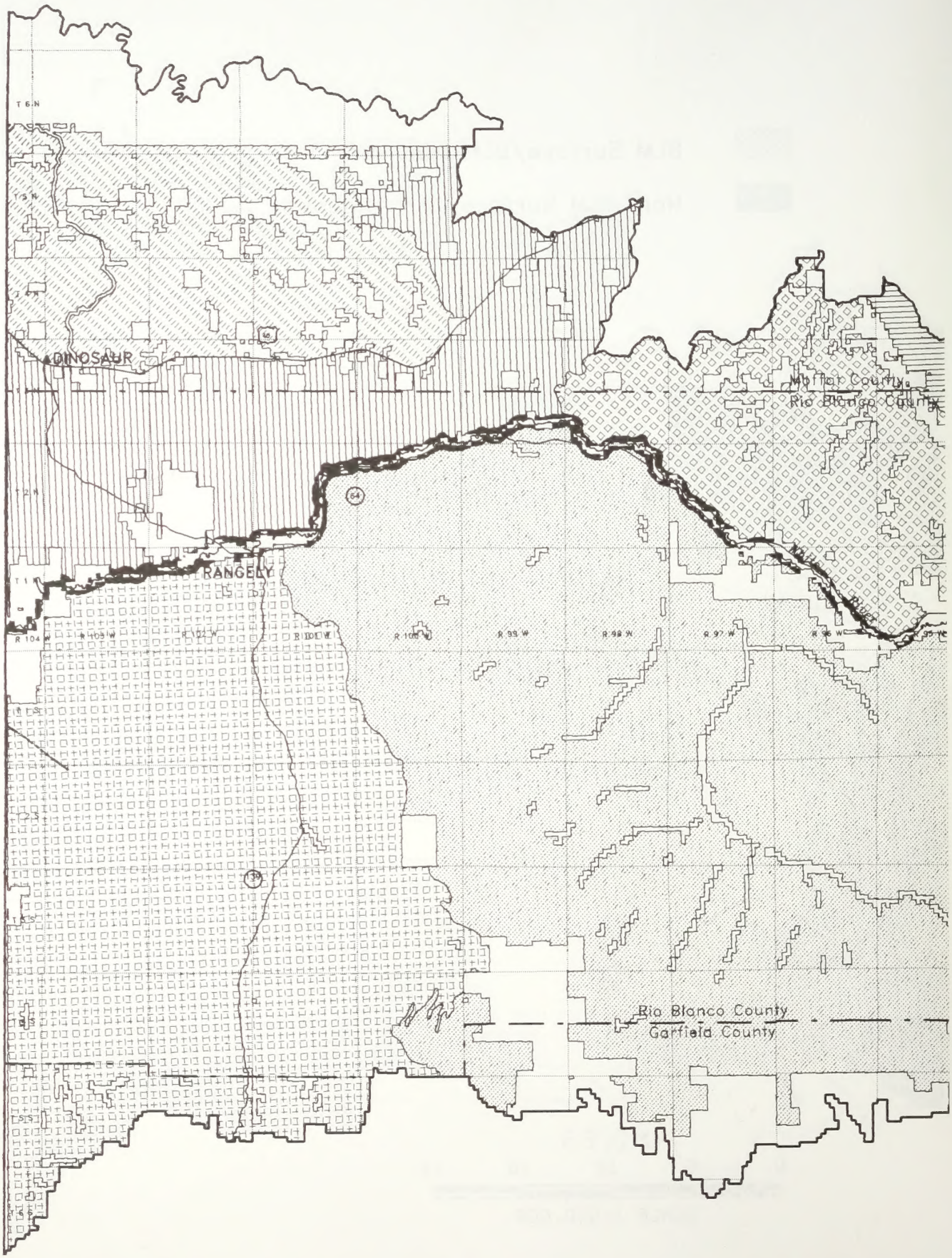
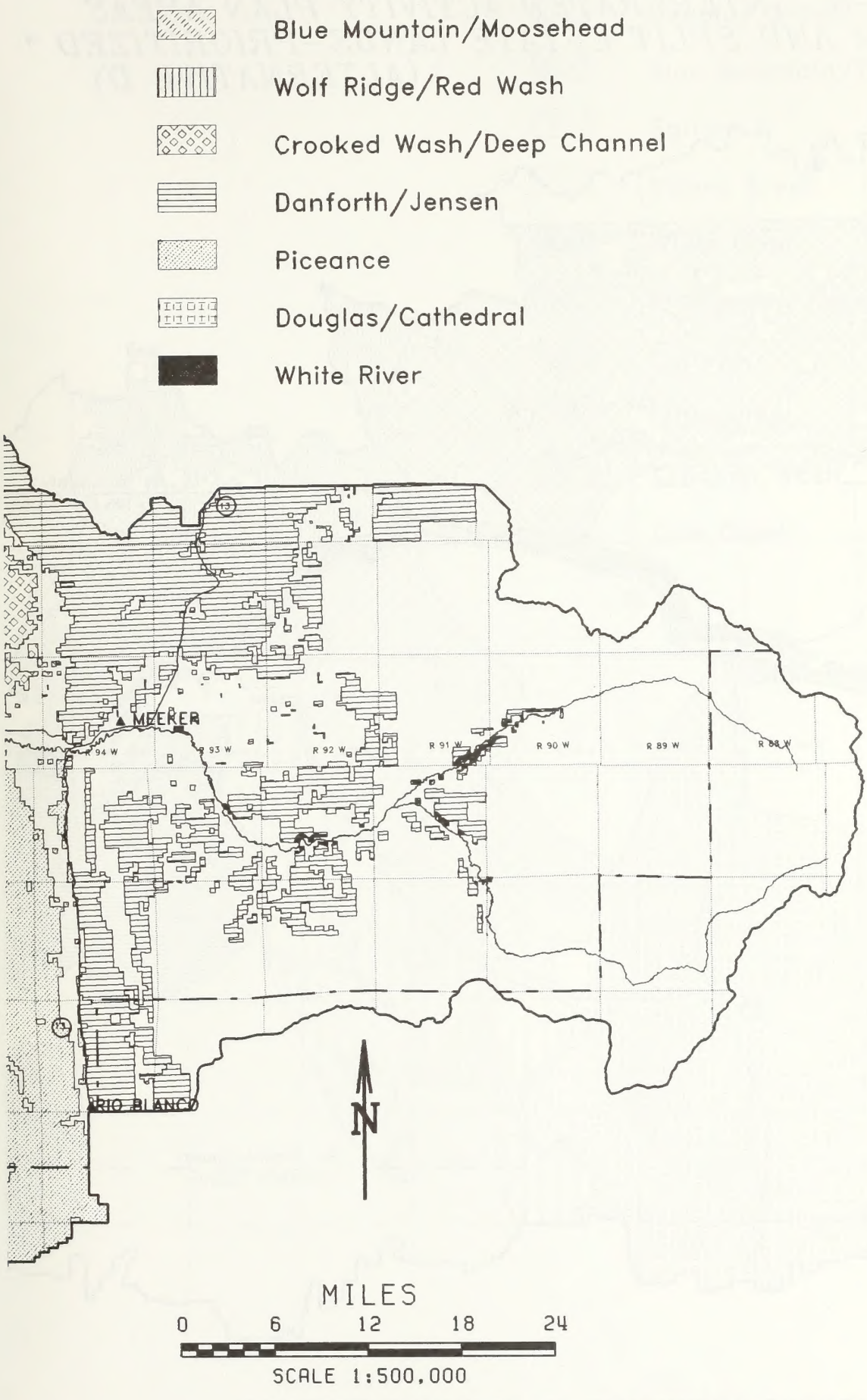
24
SCALE 1:500,000

MAP 1-1

MAP 1–2. GEOGRAPHIC REFERENCE AREAS ON BLM AND SPLIT ESTATE LANDS




Blue Mountain/Moosehead
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Crooked Wash/Deep Channel
Danforth/Jensen
Piceance
Douglas/Cathedral
White River
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R 90 W
R 89 W
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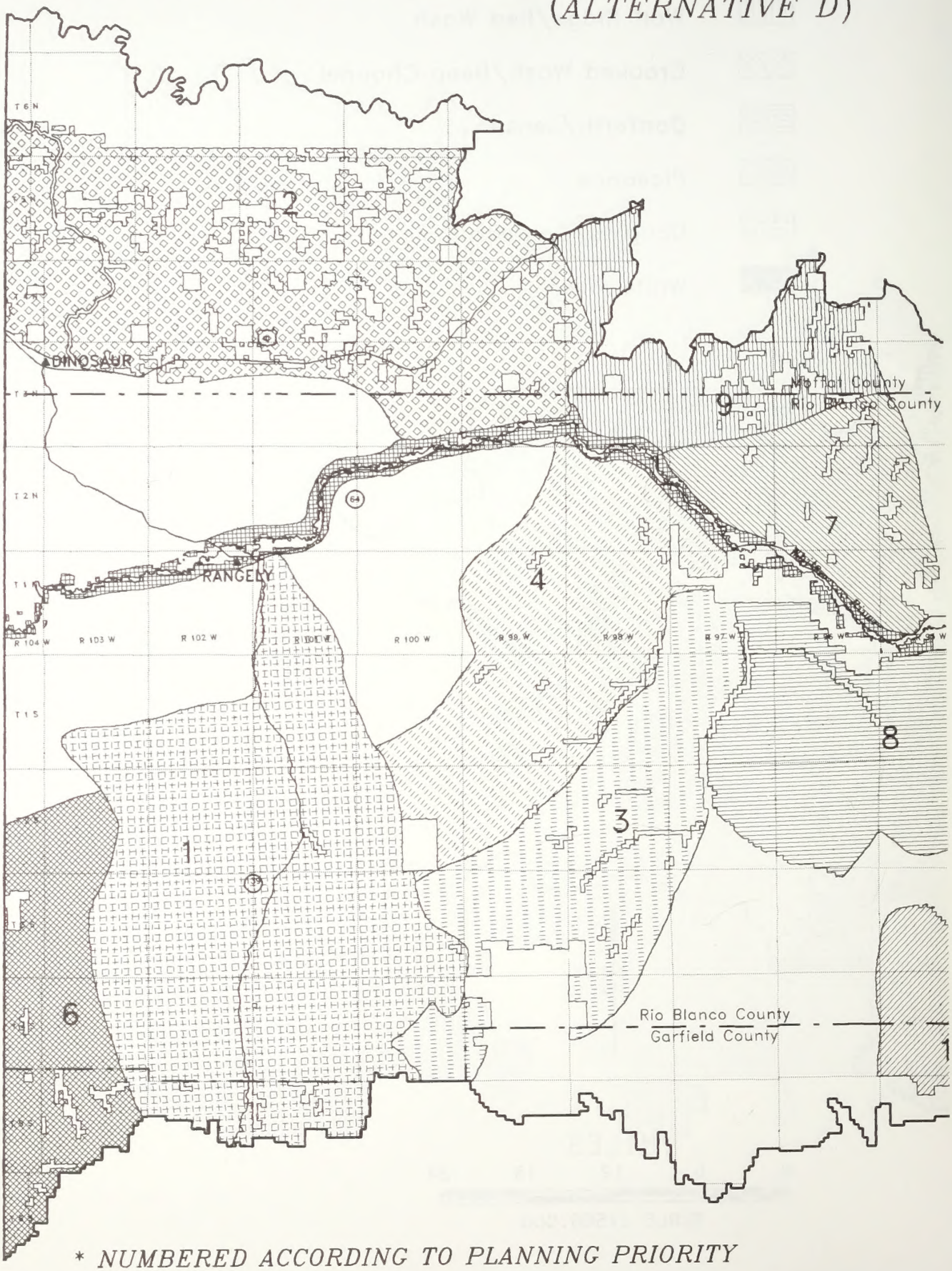
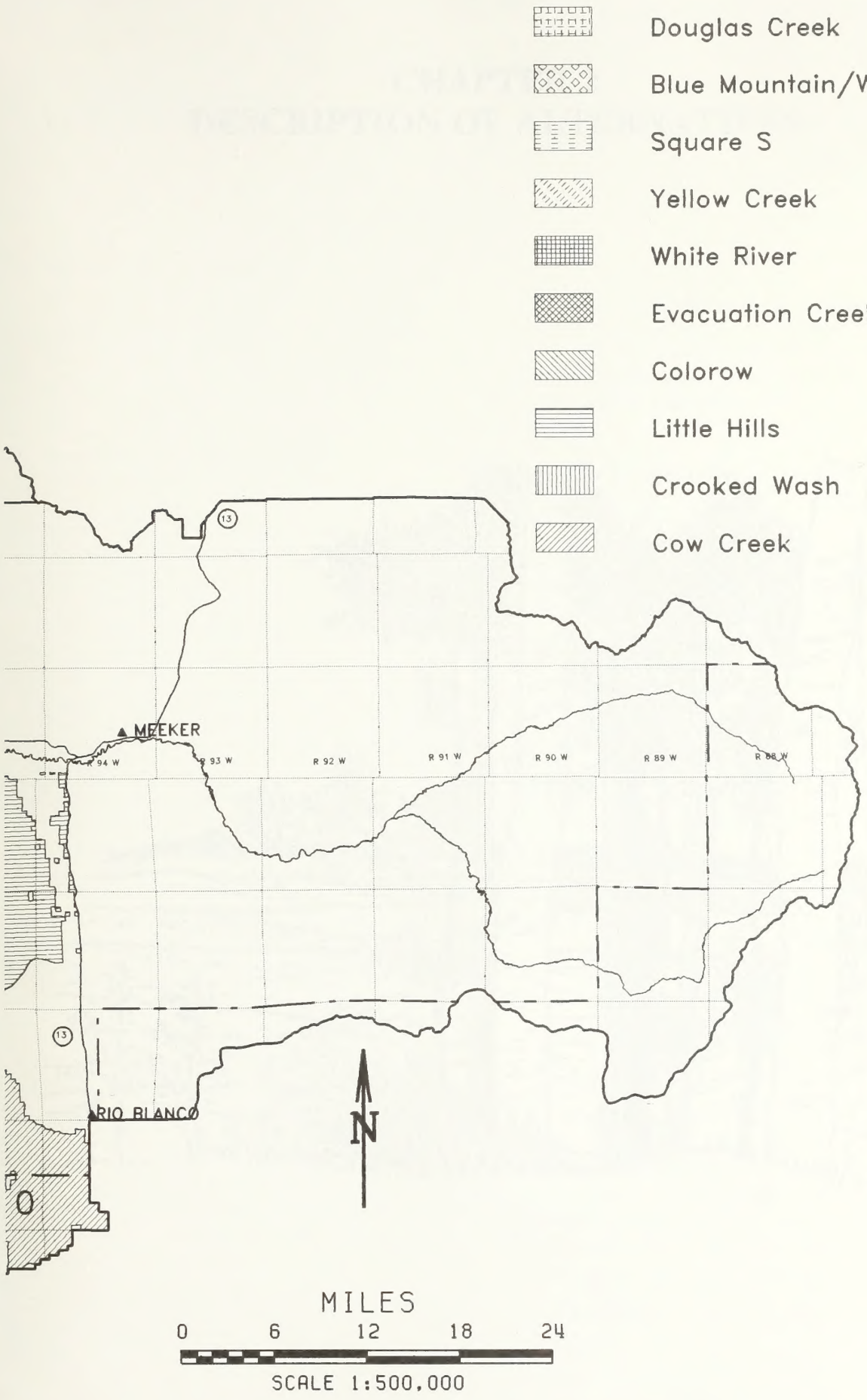
MAP 1-2

*MAP 1–3. INTERGRATED ACTIVITY PLAN AREAS ON BLM AND SPLIT ESTATE LANDS–PRIORITIZED * (ALTERNATIVE D)*



** NUMBERED ACCORDING TO PLANNING PRIORITY*


Douglas Creek
Blue Mountain/Wolf Creek
Square S
Yellow Creek
White River
Evacuation Creek
Colorow
Little Hills
Crooked Wash
Cow Creek
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
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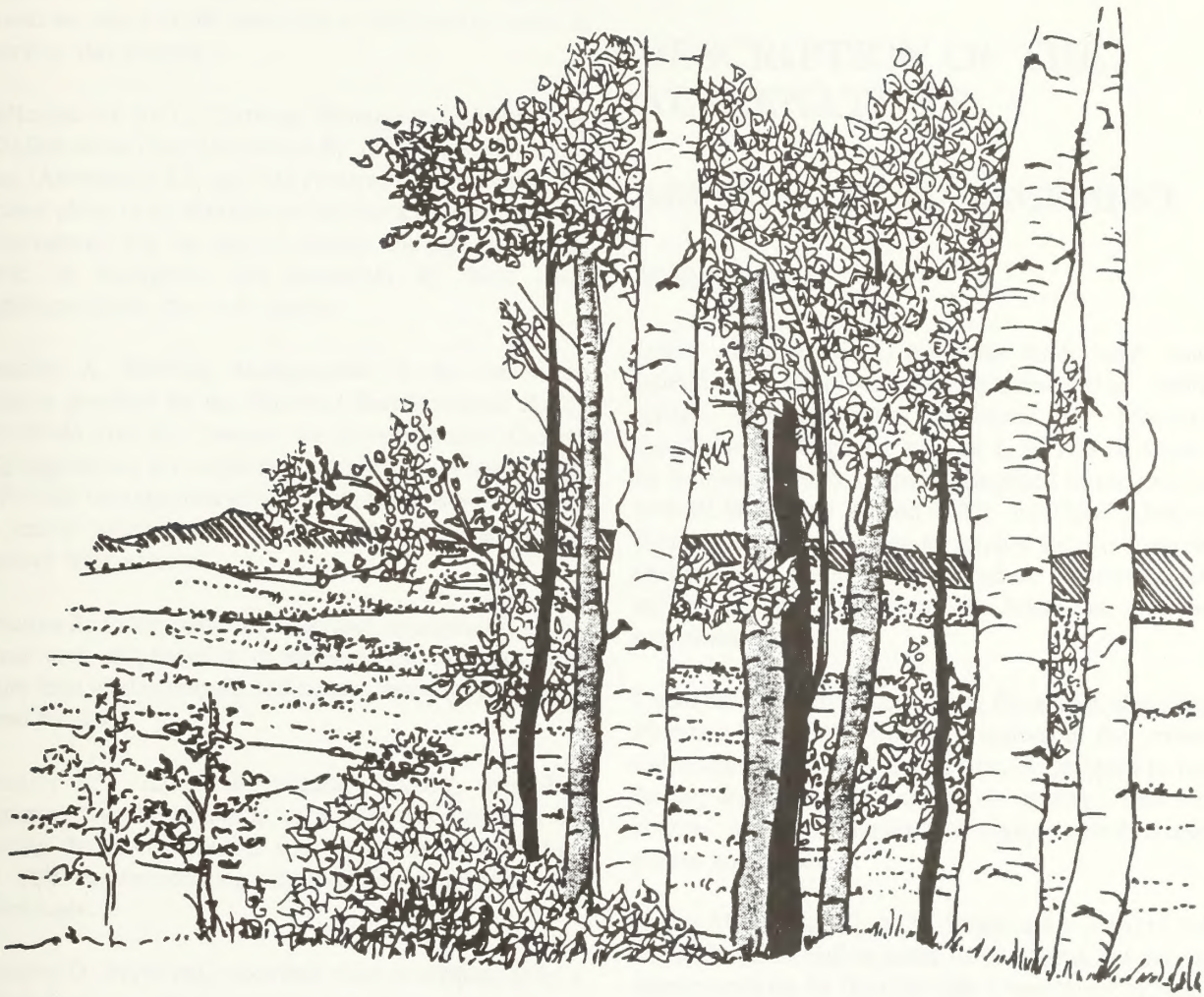
CHAPTER 2
DESCRIPTION OF ALTERNATIVES



CHAPTER 2
DESCRIPTION OF THE ALTERNATIVES

INTRODUCTION

This chapter describes four alternatives for managing the resources in the White River Resource Area. Management is displayed first by resource and then by alternative. This arrangement makes it easier to compare management of the resources under the various alternatives. Management proposed for many of the resources is displayed on maps in the back of this chapter.

The alternatives are (1) Existing Management (Alternative A), (2) Enhanced Use (Alternative B), (3) Enhanced Natural Values (Alternative C), and (4) Preferred (Alternative D). The name given to an alternatives describes the emphasis for the alternative. For the sake of brevity, the alternatives are referred to throughout this document by their letter designations rather than their names.

Alternative A, Existing Management, is the no action alternative required by the *National Environmental Policy Act* (NEPA) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA. Alternative A describes the management of the White River Resource Area as it exists today and how it would continue if this alternative were selected.

Alternative B, Enhanced Use, describes management of the resource area emphasizing commodity and resource uses with the least environmental and natural resource protection required by law.

Alternative C, Enhanced Natural Values, describes management of the resource area with an emphasis on protecting the environmental and natural resource values while still accommodating compatible commodity and resource uses.

Alternative D, Preferred, describes what is believed to be a more balanced ecosystem approach to resource management. It was formulated after considering the environmental consequences of the other three alternatives. It balances the land uses and resource values of the resource area and considers the long-term public interest and benefits of implementing the alternative.

All of the alternatives recognize the existence of valid and existing rights and have been developed pursuant to existing law and regulations. Nothing in the management descriptions should be interpreted as challenging those rights, laws, or regulations.

DESCRIPTION OF THE ALTERNATIVES

AIR QUALITY MANAGEMENT

Management

Under all alternatives, mandates from local, state, and federal air quality laws and regulations (i.e., ambient air quality standards and increments for prevention of significant deterioration in Class I, II, and III areas) would be followed. For example, prescribed burns must comply with BLM Manual Section 7723 - Air Quality Maintenance Requirements to minimize air quality impacts from resulting particulates (smoke). This procedure requires obtaining an approved open burning permit from the state prior to implementation.

Under all alternatives, air quality thresholds identified in the Piceance Basin RMP would be applied to the remainder of the resource area. Projects would be designed to minimize further degradation of existing air quality. New emission sources would be required to apply control measures to reduce emissions.

Under Alternatives C and D, scenic areas listed in Table 2-1 would be identified as areas to be considered for visibility impact analyses by the Colorado Department of Health, Air Pollution Control Division. These areas would not have special standards or regulations setting visibility limits, but industry proposals would be analyzed for visibility impacts prior to setting emissions limits and permitting new facilities or modifications to existing facilities.

Table 2-1. Scenic Vistas Identified for Visibility Impact Analysis (Alternatives C and D)

Scenic Area	Location	Visual Significance
Plug Hat Overlook	T. 4 N., R. 103 W, Secs 28 and 29	Extended views to the west, south, and east. Foreground views extend to the ridge just north of Highway 40; mid-ground views to Mellon Hill, Coal Ridge, etc; far views to Bookcliffs, Douglas Pass, Yellow Creek, and Cathedral Bluffs.
Escalante Overlook and K Point	T. 4 N., R. 103 W., Sec 10	Foreground views east to Moosehead Mountain, west to Cliff Ridge, and south/southwest across the plateau/canyon country toward the K Ranch (Bull Canyon WSA). K Point also has significant views northwest, north and northeast toward Stuntz Ridge, Roundtop Mountain, Tanks Peak, Martha's Peak, and the remainder of Blue Mountain Rim with the rolling lands along Moffat County Road 16 (Yampa Plateau) in the foreground.
Harper's Corner Road (Near the intersection with Moffat County 16)	T. 5 N., R. 103 W., Sec 28	This area has foreground views across the Yampa Plateau to the east and the headwaters of K Creek to the west. Midgound views are of Stuntz Ridge, Roundtop Mountain, Moosehead Mountain, and Cliff Ridge.
Canyon Overlook	T. 6 N., R. 103 W., Sec 19	This point has spectacular views into the monument of the Yampa Bench, the Yampa Canyon, Echo Park, and Lodore Canyon. There are also spectacular views to the south of the Yampa Plateau and Moosehead Mountain and east along the Blue Mountain rim (foreground and mid-ground views).
Echo Park Overlook Harper's Corner Overlook and Trail	T. 7 N., R. 104 W., Sec 36 T. 7 N., R. 103 W., Sec 30	These overlooks provide views mainly of Dinosaur National Monument. Views south and east into White River Resource Area lands are more limited.
Roundtop Mountain (and fire tower) Martha's Peak	T. 6 N., R. 103 W., Sec 25 T. 6 N., R. 102 W., Sec 28	These points, less than 3 miles apart, have superlative views north into Dinosaur National Monument and south, east, and west into BLM lands. Foreground views include Hells Canyon and the Yampa Plateau. Mid-ground views include Moosehead Mountain, Luxen Draw, Tanks Peak, and other features.
Serviceberry Gap Tanks Peak	T. 6 N., R. 102 W., Sec 36 T. 6 N., R. 101 W., Sec 32	Tanks Peak is located 2 miles east of Serviceberry Gap. Foreground views include Bear Valley, Serviceberry Draw, Johnson Draw, and the Yampa Plateau. Fore- to mid-ground views include Moosehead Mountain, Luxen Draw, Gunsight Gap. Further views extend well south of the White River and east to the Steamboat Springs area.
East entrance, Dinosaur National Monument	T. 6 N., R. 100 W., Sec 32	Foreground views include Bear Valley, Badger Flat, and the Bear Valley Ridge. Mid-ground views include Gunsight Gap and MF Mountain. Further views extend south to Cathedral Bluffs and east to the Steamboat Springs area.

Implementation

Air quality management decisions would become effective upon signature of the approved plan. Additional planning would not be required. Site-specific project proposals affecting BLM and adjacent lands would be reviewed for compliance with existing laws and policies protecting the areas. Mitigation would be incorporated into project proposals to reduce air quality degradation.

The list of sensitive visibility areas (Table 2-1) would be given to the State of Colorado. Air pollution emissions notices (permit applications) from industry with the potential to affect these areas would be analyzed for visibility impacts. Visibility-impacting proposals would not be issued a permit by the State of Colorado unless the impacts could be mitigated to an acceptable level.

SOILS MANAGEMENT

Management

Under all alternatives, proposed surface-disturbing activities would be analyzed to determine suitability of soils to support or sustain such activities. Activities on suitable soils would be designed to minimize soil loss by applying best management practices listed in Appendix A. Steep slopes and fragile soils areas would receive special management consideration. Activities proposed on steep slopes or fragile soils would be subject to special surface stipulations designed to reduce or prevent watershed problems. The surface stipulations are (1) no surface occupancy (NSO) and (2) controlled surface use (CSU). Appendix B includes additional information about these surface stipulations. Table 2-2 lists applicable acres for each surface stipulation for soils by alternative.

Under all alternatives, fragile watershed areas that are contributing to water quality problems in the Colorado River would be treated to reduce or prevent accelerated erosion and salt contributions to the Colorado River (see Surface Water Management section, this chapter).

Table 2-2. Surface Stipulations for Soils

Stipulation/Location	Alternative (Acres)			
	A	B	C	D
No Surface Occupancy Stipulation Areas				
Landslide Areas:				
- Baxter/Douglas Pass	7,200	N/A	8,900	8,900
- Thornburg Mountain	N/A	N/A	4,800	4,800
- Danforth Hills	N/A	N/A	13,000	13,000
- Gray Hills	N/A	N/A	3,200	3,200
- Upper White River	N/A	N/A	4,500	4,500
- Piceance Basin	N/A	N/A	1,300	1,300
Proposed Addition to Raven ACEC[1/]	N/A	N/A	630	630
Fragile Soils	N/A	N/A	791,300	N/A
Total: [2/]	7,200	N/A	827,630	36,330
Controlled Surface Use Stipulation Areas[3/]				
Soil Management Priority Areas	16,490	N/A	N/A	N/A
Saline soils (Mancos soils)	N/A	N/A	52,000	52,000
Steep slopes with fragile soils >35 percent	N/A	N/A	N/A	484,000
Total:	16,490	N/A	52,000	536,000

[1/] This proposed addition is also no surface occupancy for reasons other than soils protection (see ACEC Section, this chapter). Acreage shown is for soils only; total acreage within the proposed addition is 3,050.

[2/] Surface occupancy may be authorized under certain conditions listed in Appendix B.

[3/] Controls or constraints are listed in Appendix B.

Implementation

Best management practices listed in Appendix A would be used in designing all BLM-initiated surface-disturbing activities. Special surface stipulations would be attached to all new oil and gas leases and other surface-disturbing activities where applicable. Best management practices listed in Appendix A would be used in developing conditions of approval for all new land use authorization documents.

Under Alternatives A, B, and C individual watershed activity plans would be written to treat fragile watershed areas. Under Alternative D, watershed treatments would be included in integrated activity plans (see Integrated Activity Management Plan Section, Chapter 1).

SURFACE WATER MANAGEMENT

Management

Compliance and consistency with the state nonpoint source management plan, state water quality standards, and the *Clean Water Act* (CWA) is mandatory. The CWA places responsibility for protecting water quality with the states and requires federal agency compliance. As required by Section 319 of the CWA, the Colorado Nonpoint Source Management Program was developed to provide an implementation strategy for treatment of water quality problems previously identified in the Colorado Nonpoint Source Assessment Report. To comply with the requirement, management identified best management practices (BMPs) and measures which would be undertaken to reduce pollutant loadings. Included in Appendix A are BMPs that would be applied, but are not limited to, management actions.

The state also has adopted water quality standards and effluent limitations. These are included in the basic standards and methodologies for surface water and apply to all state waters and to specific waters. Any water discharged on the surface by industry is controlled by the State of Colorado's National Pollutant Discharge Elimination System (NPDES) permits, which are issued in accordance with the Classification and Numeric Standards, Colorado River Basin. As required by the *Clean Water Act*, Colorado has also adopted an Antidegradation Policy which applies to both surface and groundwater. The policy requires state waters to be maintained at existing quality unless it can be demonstrated that a change in necessary. Other committed mitigation includes compliance with Office of Surface Mining regulations for coal leasing, State Water Quality Standards and U.S. Army Corps of Engineers Section 404 permit requirements.

Under all alternatives specified watersheds would be treated to (1) maintain or improve both water quality and quantity to be compatible with existing and anticipated uses and applicable state and federal water quality standards; (2) protect from further degradation fragile watersheds which are major BLM land contributors of sediment and salinity to the Colorado River System; and (3) protect and improve priority streams that lack channel stability and have been identified as not meeting state water quality standards.

Fragile watersheds are listed in Table 2-3 and shown on Map 2-1. Under all alternatives, existing watershed activity plans (WAPs) would be implemented. Under Alternatives C and D, additional fragile watersheds would be identified for WAPs.

Table 2-3. Fragile Watersheds

Watershed	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Existing Plans				
Red Wash WAP	75,520	75,520	75,520	75,520
White Face Butte WAP	730	730	730	730
Baking Powder WAP	290	290	290	290
Lower Missouri Creek WAP	2,470	2,470	2,470	2,470

Table 2-3 continued

Watershed	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Lower Wolf Creek WAP	580	580	580	580
High Dobie WAP	950	950	950	950
Lower Wolf Creek Exclosure WAP	370	370	370	370
Total Existing	80,910	80,910	80,910	80,910
Proposed Plans				
Black's Gulch	20,400	N/A	20,400	20,400
Cottonwood Creek	28,330	N/A	28,330	28,330
Crooked Wash	39,500	N/A	39,500	39,500
Douglas Creek	238,060	N/A	238,060	238,060
Evacuation Creek	99,140	N/A	99,140	99,140
Spring Creek	29,770	N/A	29,770	29,770
Smith Gulch	13,370	N/A	13,370	13,370
Stinking Water	40,080	N/A	40,080	40,080
Total Proposed	508,650	N/A	508,650	508,650
Total Existing and Proposed	589,560	80,910	589,560	589,560

Table 2-4 lists perennial streams that do not meet state water quality standards. These streams are contributing to erosion and increased salinity in the Colorado River Basin and are considered priority stream segments. They have been identified for protection and treatment. Fragile watersheds and stream segments not meeting state water quality standards would receive special management consideration.

Table 2-4. Perennial Streams Not Meeting State Water Quality Standards

Name of Stream	Pollutant	Length (miles)	Severity
White River below Meeker to Utah	SS, S, N	99	high
Wolf Creek to confluence with White River	SS, S	10	low
Red Wash to confluence with White River	SS, S	22	medium
Main Douglas Creek to confluence with White River	SS, S	20	high
Soldier Creek to Douglas Creek	SS, S	8	high

Table 2-4 continued

Name of Stream	Pollutant	Length (miles)	Severity
Yellow Creek to confluence with White River	SS, S	4	medium
East and West Evacuation Creek	SS, S	4	high

SS = suspended sediment; S = salinity; N = nutrients Source: Colorado Nonpoint Assessment Report, 1988

Treatments would include the following: (1) Designing BLM-initiated projects using best management practices listed in Appendix A; (2) requiring companies to use best management practices listed in Appendix A when designing their proposed projects; (3) using Appendix A to design conditions of approval for land use authorizations; (4) attaching surface stipulations listed in Appendix B to all new oil and gas leases and other surface-disturbing activities; and (5) preparing activity plans that address watershed treatments.

Under all alternatives, the establishment of an association of public land users to coordinate, monitor and recommend mitigation measures for actions affecting water resources would be encouraged.

Implementation

All BLM and approved projects would be designed using best management practices listed in Appendix A as minimum standards. Applicable surface stipulations listed in Appendix B would be attached to all new land use authorizations.

Under Alternative A, B, and C, new and revised individual watershed activity plans would be written to treat fragile watersheds. Under Alternative D, watershed treatments would be included in integrated activity plans (see Integrated Activity Management Plan Section, Chapter 1). Private landowners and other state and federal land management agencies would be encouraged to participate in preparing the activity plans.

GROUNDWATER MANAGEMENT

Management

Under all alternatives, groundwater would be managed to maintain the integrity of present aquifer systems both in quality and quantity. Treatments would include the following: (1) designing BLM-initiated projects using best management practices listed in Appendix A; (2) requiring companies to use standard design and best management practices listed in Appendix A in designing their proposed projects; (3) using Appendix A to design BLM conditions of approval for land use authorizations; and (5) preparing activity plans that address watershed treatments.

In addition, establishment of an association of public land users to coordinate, monitor and recommend mitigation measures for actions affecting groundwater resources would be encouraged.

Implementation

All BLM-approved projects would be designed using best management practices listed in Appendix A as minimum standards. Oil and gas wells converted to water wells would be required to use best management practices listed in Appendix A prior to final abandonment.

WATER RIGHTS MANAGEMENT

Management

In compliance with state law, water rights would be acquired for use of water in support of BLM programs. In addition, recommendations would be made to the Colorado Water Conservation Board for instream flow surveys to ensure proper protection of flow-dependent resources on BLM stream segments. Table 2-5 identifies high priority stream segments currently suitable for instream flow surveys. On high priority cold water fisheries that already have instream flows, BLM would work with the Board when possible to obtain a more senior right.

Table 2-5. Streams Suitable for Flow Surveys

Stream	Criteria
Blue Mountain/Moosehead Geographical Reference Area[1/]	
Meadow Creek	2,3
Piceance Basin Geographical Area	
Black Sulphur Creek, Bitter Creek,	2,3
Willow Creek, Yellow Creek	3
Douglas/Cathedral Geographical Reference Area	
Willow Creek	1,3
West Creek, Trail Canyon	3
White River Geographical Reference Area	
White River from Piceance Creek to Colo/Utah State Line	1,3

1=habitat for special status fish, 2=cold water fishery, 3=high-priority riparian values

[1/] See Chapter 1 for an explanation of geographical reference areas

Treatments would include the following: (1) Designing BLM-initiated projects using best management practices listed in Appendix A; (2) requiring companies to use best management practices listed in Appendix A in designing their proposed projects; (3) using Appendix A to design conditions of approval for land use authorizations.

Implementation

All BLM-permitted projects would be designed in accordance with the appropriate BLM manual(s). When site-specific conditions require supplemental guidance, the best management practices (BMPs) listed in Appendix A would be applied as minimum standards. In no instance would BMPs take precedence over Bureau directives. Oil and gas wells converted to water wells would be required to use best management practices listed in Appendix A prior to final abandonment.

Under Alternative A, B, and C, watershed activity plans would be written for each integrated activity plan area to conduct a comparison of decreed water rights versus cumulative water demand as required by allotment, recreation, wildlife, riparian, and wilderness plan actions. In locations where land management demands exceed decreed supplies by more than 25 percent, water right filings would be initiated to bring demand in line with supply.

Under Alternative D, the water right analysis would be included in integrated activity plans (see Integrated Activity Plan Section, Chapter 1). Private landowners and other state and federal land management agencies would be encouraged to participate in preparing the activity plans.

WATER DEPLETIONS

Management

Management of water depletions would be the same under all alternatives. New water depletions in the upper Colorado River Basin resulting from BLM-permitted projects would be calculated using guidelines listed in Table 2-6. For all depletions, compensation in the form of a one-time payment per project would be made to the recovery implementation program for endangered fish species in the upper Colorado River Basin. Water depletions resulting from existing BLM-permitted projects would be exempt from compensation so long as progress continues to be made in the recovery of the endangered fish species.

Table 2-6. Water Depletion Guidelines

Water-Depleting Project	Guideline
Diversions	equal to total amount diverted
Guzzlers	4.25 acre-feet/surface acre
Impoundments	4.25 acre-feet/surface acre
Oil and Gas operations	.1 to .75 acre-feet per well drilled and operated (including dry holes)
Springs and Wells	equal to 100 percent of flow sustained over a given period of time or one year
Waterfowl projects	3.44 acre-feet/habitat acre

Based on a BLM and U.S. Fish and Wildlife Service (USFWS) programmatic biological assessment (PBA), formal consultation required by Section 7 of the *Endangered Species Act* (ESA) would not be required for individual water-depleting projects in the upper Colorado River Basin until reaching a cumulative total of 2,900 acre-feet. Formal consultation would be required, however, for individual projects that would deplete more than 125 acre-feet per year or impact water quality.

DEFINITION OF WATER DEPLETION

Depletion is defined by the US Fish and Wildlife Service (USFWS) as "water which would contribute to the river flow if not intercepted and not returned to the system." Within the resource area, all surface and ground water depletions indirectly resulting from BLM-permitted actions are considered "depletions of tributary waters from the Upper Colorado River Basin."

BLM AGREEMENT WITH USFWS REGARDING FORMAL SECTION 7 CONSULTATION FOR WATER-DEPLETING PROJECTS

Formal Section 7 Consultation was conducted with the USFWS through a programmatic biological assessment (PBA) prepared for the upper Colorado River Basin. The consultation was conducted for four federally-endangered fish in the upper Colorado River Basin. The PBA analyzed the cumulative impacts of permitting individually minor but collectively major water-depleting projects. This was done by estimating the water depletions that could result indirectly from BLM-permitted projects over the next 5 years based on historic depletions--the depletions of the previous 5 years. The PBA considered in its analysis only those activities permitted by BLM on BLM and split-estate lands for which BLM has decision-making authority.

The PBA analyzed the effects of permitting individual projects that would result in water depletions of less than 125 acre-feet per year per project. The cumulative total analyzed for all projects was 2,900 acre-feet. The purpose of the PBA was to expedite and simplify the formal USFWS consultation process required by Section 7 of the *Endangered Species Act* (ESA) by allowing BLM to permit individual projects on BLM and split estate lands without conducting formal Section 7 consultation each time.

Implementation

The NEPA document prepared for the project would calculate depletions and make a determination of whether formal Section 7 consultation would be required. The water depletion would be recorded in the resource area office, and a report listing the annual water depletions would be submitted annually to the BLM Colorado State Office. Only those projects for which BLM has discretionary decision-making authority would be recorded.

BLM would initiate formal Section 7 consultation upon reaching or exceeding a cumulative water depletion total of 2,900 acre-feet, (2) prior to permitting a single project that could result in average annual depletions exceeding 125 acre-feet, and (3) prior to authorizing projects that would impact water quality.

OIL AND GAS MANAGEMENT

Management

Management would be the same under all alternatives except for the number of acres that would be closed to discretionary leasing and the number of acres that would be open to leasing subject to surface stipulations. The number of acres within each category would depend upon the objective or emphasis of the alternative and on management proposed for other resources. For example, more acres would be subject to a no surface occupancy (NSO) stipulation under Alternative C (Enhanced Natural Values Alternative) than under Alternative B (Enhanced Use Alternative) because of the greater emphasis placed on protecting natural values under Alternative C.

Availability of Lands for Oil and Gas Leasing and Development. Presently, the six wilderness study areas (WSAs) in the resource area totaling, 81,190 acres (see Wilderness Section, this chapter), are under wilderness review and are under a nondiscretionary closure (closed by law) (Map 2-2, Table 2-7). Also closed by nondiscretionary closure (Secretarial Order) is the Harper's Corner Road scenic easement (2,530 acres). The WSAs will remain closed to leasing until such time as Congress releases them from further wilderness consideration. The Harper's Corner road scenic easement will remain closed indefinitely.

WILDERNESS PROTECTION

Based on a wilderness inventory conducted in the 1970s, BLM designated six areas within the resource area as wilderness study areas (WSAs): Bull Canyon, Willow Creek, Skull Creek, Black Mountain, Windy Gulch, and Oil Spring Mountain. These WSAs, which are under wilderness review, are presently managed under BLM *Wilderness Interim Management Policy Guidelines for Lands Under Wilderness Review* (IMPG) and are closed by law to leasing. All six WSAs will remain closed to leasing until Congress releases them from wilderness consideration.

Of the six WSAs, three (Bull Canyon, Skull Creek, and Willow Creek) have been recommended for wilderness designation. It is assumed that Congress will adopt these recommendations. Therefore, under all alternatives, it is assumed that the three recommended WSAs will be designated as wilderness and remain closed to leasing indefinitely and the three nonrecommended WSAs (Black Mountain, Windy Gulch, and Oil Spring Mountain) will be released from wilderness consideration and eventually become available for leasing.

Table 2-7 shows the availability of BLM and split-estate lands for leasing following wilderness designation, assuming only the three WSAs recommended for wilderness designation will be designated as wilderness. It also shows the acres, by alternative, that would be open to leasing subject to surface stipulations.

Table 2-7. Availability of BLM and Split-Estate Lands for Leasing Following Wilderness Designation

Leasing Availability	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Closed to Leasing				
1. Nondiscretionary:				
a. Bull Canyon, Willow Creek, Skull Creek WSAs[1/]	41,250	41,250	41,250	41,250
b. Harper's Corner Road Scenic Easement[2/]	2,530	2,530	2,530	2,530
2. Discretionary:				
a. Moosehead Mountain Road Closure Area	N/A	N/A	6,260	N/A
b. Oak Ridge State Wildlife Area	N/A	N/A	9,300	N/A
Open to Leasing with Surface Stipulations[3/]				
1. Subject to NSO stipulation	19,750	276,040	1,125,720	148,450
2. Subject TL stipulation	591,860	331,850	1,631,040	959,000
3. Subject to CSU stipulation	831,380	1,050,120	1,528,230	1,228,280

N/A = Lease restrictions do not apply under this alternative.

[1/]Assumes only Bull Canyon, Willow Creek, and Skull Creek WSAs will be designated as wilderness.

[2/]Harper's Corner Road scenic easement is closed to leasing by a Secretarial Order.

[3/]Columns cannot be totaled because many stipulations overlap one another.

Surface Stipulations and Standard Lease Terms. Appendix B, Surface Stipulations, lists, by alternative, the surface stipulations that would apply to lands available for leasing. The surface stipulations that would be applicable to open areas are no surface occupancy (NSO), timing limitations (TL), and controlled surface use (CSU). These stipulations would also be applied, where appropriate, to other surface-disturbing activities authorized in the White River Resource Area. Maps 2-3 through 2-5 show surface stipulations for oil and gas leasing. Map 2-6 shows oil and gas potential.

The areas open to leasing would be subject to standard lease terms in addition to special stipulations, as explained in Appendix C, and also to laws such as the *Endangered Species Act*. Standard lease terms give the area manager

authority to modify operations (exploration, development, production, and maintenance) at the time they are proposed. A modification of operations under standard lease terms is considered a mitigation measure rather than a stipulation because the modification is developed after rather than before issuance of the lease. This mitigation is attached to applications for permit to drill (APDs) and sundry notices as conditions of approval (COA). Appendix A includes a list of best management practices that would be used in the development of COAs.

Projected Development. It is projected that 1,154 wells will be drilled over the next 20 years and that 835 of these wells will become producing or shut in wells. It is also projected that a total of 11,540 acres will be disturbed as a result of this development activity. This development is assumed for all alternatives and takes into consideration the disturbance associated with roads, pipelines, and well pads.

Implementation

Leasing. Surface stipulations and lease notices would be entered into a computer data base by legal description by quarter-quarter section (40 acres) or lots. The BLM Colorado State Office would append applicable lease stipulations and lease notices to new leases using the computer data base.

Development. An environmental analysis document would be prepared for all applications for permit to drill (APDs) and sundry notices proposing new surface disturbance. The analysis in the document would be based upon the lessee's operating plans, applicable lease stipulations, on-site inspections, and additional mitigation measures developed as a part of the analysis. A decision would be made through the analysis process whether to deny or approve the APD and whether to exempt, modify, or waive an existing lease stipulation. The mitigation developed through the analysis process would be added to the APD as a COA. It should be noted that a stipulation could be excepted, modified, or waived, as stated in the stipulation, without preparing an RMP amendment.

OIL SHALE MANAGEMENT

Management

Oil shale leasing would be the same under all alternatives. Decisions developed for oil shale in the 1987 *Piceance Basin RMP* regarding availability of BLM and split estate lands would be carried forward into this RMP. Lands found available for leasing in the Piceance Basin RMP would be subject to surface stipulations developed for this RMP.

Availability of Lands for Oil Shale Leasing and Development (Piceance Basin RMP Oil Shale Decisions). A total of 10,230 acres are currently under oil shale lease. A total of 42,420 acres (the Piceance dome) would be unavailable for oil shale leasing because of conflicts with oil and gas development and unfavorable geologic setting for oil shale and sodium development.

A total of 223,860 acres would be available for oil shale leasing (Table 2-8, Map 2-7 (at the end of the chapter). Of this, 39,140 acres would be available for open pit development. This land would be scheduled for offerings based on demand and progress in developing existing oil shale leases (Tracts C-a and C-b) and on private oil shale projects in the region.

Another 70,820 acres in the multimineral zone (containing oil shale, nahcolite, and dawsonite) would be available only for multimineral leasing. BLM and split-estate lands within the multimineral leasing zone initially would be available for noncommercial multimineral research leasing for the purpose of developing multimineral recovery technology. Following development of acceptable multimineral recovery technology, noncommercial lease tracts could be redelineated into commercial tracts and leased for multimineral development.

Table 2-8. Availability of Lands for Oil Shale Leasing

Availability	Acres
Lands unavailable for oil shale leasing (existing leases and Piceance Dome)	52,650
Lands available for oil shale leasing	223,860
Lands reserved for multimineral leasing	70,820

The 223,860 acres available for oil shale leasing and the 70,820 acres available for multimineral leasing would be subject to the carrying-capacity concept described in Table 2-9.

Table 2-9. Summary of Critical Carrying Capacities Thresholds to Oil Shale Development in the Piceance Basin

Resource	Measurement	Thresholds	Remarks
Air Quality	Ambient concentrations of pollutants in the air as determined by ambient monitoring and dispersion modeling.	Class II/category II increments for SO2 and particulates available in Piceance Basin, and class I/category I increments in Flat Tops Wilderness and other designated class I/category I areas in the region. Any level demonstrated to have adverse impacts on Air Quality Related Values (AQRVs) including visibility and acid deposition in class I areas.	PSD increments are usually exceeded before adverse impacts to AQRVs are demonstrated except for visibility. As technology improves or if evaluation methodologies change, production rates may increase. Actual impacts must be monitored and compared to predicted rates. PSD permits effectively limit to development but not necessarily leasing. Existing studies have estimated these limits to represent a cumulative shale oil production level for Piceance of 300,000 to 400,000 barrels per day. These estimates are based on projected general regional development, specific technologies and project production rates that are subject to change.
Socio-economic	Annual growth rate of affected communities.	As determined through consultations with local officials of affected communities. Guidelines to be used in making this determination: 5-15 percent.	Economic carrying capacity is relative to local tax base, bonding capacity, federal and state grants-in-aid, and up-front corporate impacts. Most social science researchers place the critical rate of annual growth beyond which social change is disruptive between 5 and 15 percent, depending upon attitudes and other social factors and the adequacy of mitigation. Local officials would be consulted prior to leasing based on social and/or economic carrying capacity. Postponement of development or staggered leasing would be possible alternatives if such overloading seemed probable.
Big Game	Habitat carrying capacity to support wintering mule deer on BLM land in the Piceance Basin.	The habitat needed to maintain 24,900 mule deer (24,650 AUMs).	This figure is 83 percent of actual wintering Piceance Basin herd of 30,000 on all lands, the minimum acceptable herd size agreed to the BLM and Colorado Division of Wildlife. Actual location, size and duration of surface disturbance affects amount of leasing allowed. Stringent wildlife habitat mitigation may be imposed instead of prohibition of leasing depending on actual site-specific and cumulative adverse impacts to mule deer. Livestock grazing use would not be reduced by the BLM as a method of mitigating the impact of energy development to decrease livestock/wildlife forage competition or to supplement forage available to wildlife. Mitigation necessary to avoid development impacts from exceeding this threshold would be the responsibility of the mineral lessee, not BLM.
Water Quality	Discharge water quality of individual projects.	Stream standards as prescribed by NPDES permitting regulations issued by the State of Colorado for specific projects. Allowable pollutant concentrations based on stream ratings as classified by the State of Colorado.	Colorado Department of Health-Water Quality Control Commission issues NPDES permits for projects, based on anticipated discharges. Pollutant discharges may not exceed water quality limits established in the Classification and Numeric Standards, Colorado River Basin. Actual cumulative water quality impacts must be monitored to assure analysis is sufficient to determine whether to issue permit.

Surface Stipulations Proposed in this RMP. Lands found available for multimineral-only and oil shale leasing in the Piceance Basin RMP would be subject to surface stipulations developed in this RMP and listed in Appendix B. No surface occupancy, timing limitations, and controlled surface use stipulations would be incorporated in the approval of a mine plan through mitigation developed jointly between the lessee, BLM, and the State of Colorado.

Projected Development. Based on current and projected economics in the world oil market plus capital cost and lead time for projected development, it is unlikely that shale oil from the Piceance Basin will be commercially produced at a sustained yield during the life of this RMP. However, occasional projects on both federal and private resources may continue to test the feasibility of economic shale oil production. Most likely, future projects would focus on sites with existing facilities or richer oil shale deposits such as Tracts C-a, C-b, or the various private facilities.

Implementation

The two existing prototype leases would be developed according to approved detailed development plans. Additional environmental analysis would be required prior to offering new oil shale leases. Leases proposed for open pit mining methods would require additional planning to accommodate the off-site disposal of overburden and spent shale. Proposed leases that would individually or collectively exceed the carrying capacities listed in Table 2-9 would not be approved. The location and size of potential lease tracts would be determined based on the analysis of formal expressions of leasing interest from industry. Additional leasing would not be considered until the existing federal lease tracts and private oil shale projects were diligently being developed. All oil shale leases would be subject to surface stipulations listed in Appendix B.

SODIUM MANAGEMENT

Management

Sodium leasing decisions in the *Piceance Basin Resource Management Plan* (RMP) would be carried forward into this RMP except that the Piceance Dome would not be available for leasing, and the multimineral zone would be reserved for multimineral leasing only. These leasing decisions would apply under all alternatives.

Surface stipulations developed for this RMP (Appendix B) would be applicable to all lands found available for sodium leasing. Surface stipulations would vary by alternative.

Availability for Leasing (Piceance RMP Sodium Decisions and Proposed Revisions). An estimated 220,000 acres of BLM and split-estate lands are underlain by sodium minerals in the Piceance Basin. Of this, 16,620 acres are currently under sodium lease (Table 2-10, Map 2-8). The Piceance Dome (approximately 42,420 acres), which was shown in the *Piceance Basin RMP* as available for leasing, would not be available for leasing in this RMP. The multimineral zone (approximately 70,820 acres), shown in the Piceance Basin RMP as available for sodium leasing, would be available for multimineral-only (oil shale, nahcolite, and dawsonite) leasing. These changes would bring sodium in line with decisions made for the oil shale.

The remaining BLM and split-estate lands underlain by sodium (93,210 acres) would be available for sodium leasing. Any lands considered for sodium leasing would be subject to the carrying-capacity concept as described in Table 2-9, Oil Shale Management Section.

Lease offerings would be scheduled based on demand and progress in developing existing sodium leases and on proof that sodium could be extracted without removing significant amounts of organic matter and without causing significant damage to the oil shale beds.

BLM and split-estate land within the multimineral-only leasing area would be available for noncommercial multimineral research tract leasing for the purpose of developing multimineral recovery technology. Following development of acceptable multimineral recovery technology, noncommercial lease tracts could be redelineated into commercial tracts and leased for multimineral development.

Table 2-10. Availability of BLM and Split-Estate Lands for Sodium Leasing

Availability	Acres
BLM and split-estate lands underlain by sodium	220,000
Lands unavailable for sodium leasing:	
- Existing sodium leases	16,620
- Piceance Dome	42,420
Lands available for sodium-only leasing	93,210
Lands available for multimineral-only leasing	70,820

Surface Stipulations Proposed in this RMP. Lands available for multimineral-only and sodium leasing would be subject to surface stipulations developed in this RMP and listed in Appendix B. NSO, TL, and CSU stipulations

would be incorporated into the mine plan through mitigation developed jointly between the lessee, BLM, and the State of Colorado.

Projected Development. It is estimated, based on existing demand, that the existing lease tracts could meet the projected demand well beyond the life this RMP.

Implementation

The existing sodium leases would be managed under all alternatives according to the individual lease terms and conditions. The approved mine plan for the solution mining of sodium from the Boies bed would be in accordance with the approved mine plan for White River Nahcolite Minerals, Ltd. Additional environmental analysis would be required prior to offering new leases. Leases that could individually or collectively exceed carrying capacities listed in Table 2-9 (see Oil Shale Section, this chapter) would not be approved. Any leases issued also would be subject to surface stipulations listed in Appendix B. The timing limitations and controlled surface use stipulations would be incorporated into the mine plan through mitigation developed jointly between the lessee, BLM, and the State of Colorado.

COAL MANAGEMENT

Management

Lands Unsuitable for Coal Leasing Consideration. A coal unsuitability review conducted for the *Coal Amendment to the White River Resource Area Land Use Plan* (BLM 1981) applied 20 coal unsuitability criteria to 172,700 acres of BLM and split-estate lands with preference right lease applications (PRLAs) but did not include lands that were already under lease. Of the 172,700 acres to which the unsuitability criteria were applied, 11,470 acres were found unsuitable for both surface and underground mining, leaving 161,230 acres suitable for further coal leasing consideration. It should be noted that 120 of the 11,470 acres found unsuitable for leasing in the 1981 coal amendment were already leased. Of the 161,230 acres found suitable for further coal leasing consideration, 43,380 acres were determined to be suitable for underground mining only (unsuitable for surface mining), and 117,800 acres were determined to be suitable for both surface and underground mining. Map 2-9 shows the results of the coal unsuitability review. It also shows the coal leases as they exist today rather than as they existed in 1981.

Under all alternatives, the acres determined to be suitable for further coal leasing consideration have been carried forward into this RMP. These acres will likely change when a coal leasing application is received because the coal unsuitability criteria will be reapplied. In addition, 10,060 known recoverable coal reserves. This acreage included acres of unleased lands included in the 1981 study area have been leased.

Lands Available for Coal Leasing Consideration. No lands were found unavailable for leasing in the 1981 coal amendment based on multiple-use conflicts. Therefore, under Alternative A, the lands found suitable following reapplication of unsuitability criteria would be available for coal leasing consideration.

Under Alternatives B, C, and D, the lands found suitable following reapplication of unsuitability criteria minus approximately 600 acres of the proposed addition to Raven Ridge ACEC (see ACEC Section, this chapter) would be available for coal leasing consideration.

Table 2-11 lists, by alternative, the number of acres that would be available for coal leasing consideration based on the 1981 coal unsuitability review and the multiple-use proposals developed for this RMP.

Table 2-11. Availability of BLM and Split-Estate Lands for Coal Leasing

Category	Alternative A (Acres)	Alts. B,C,D (Acres)
Recoverable coal deposits (1981 coal amendment)	172,700	172,700
- Less lands unsuitable for all types of mining (1981 coal unsuitability review)[1/ 2/]	11,350	11,350

Table 2-11 continued

Lands suitable for coal leasing consideration based on 1981 coal unsuitability review (43,380 acres underground only plus 117,850 acres surface and underground mining)[1/] - Less lands leased since 1981 and PRLAs - Less lands unavailable based on multiple-use proposals in this RMP	161,230 10,060 0	161,230 10,060 600
Lands currently available for coal leasing consideration[1/]	151,170	150,570

[1/] Acreage subject to change following reapplication of coal unsuitability criteria.
[2/] A total of 120 acres that were under lease in 1981 but shown as unsuitable in the 1981 coal amendment have been subtracted from this total.

Lease Stipulations. The 1981 coal amendment developed lease stipulations for 41,730 of the 43,380 acres determined to be suitable for underground mining. These stipulations would be carried forward under Alternative A.

Under Alternatives B, C, and D, surface stipulations developed for this RMP and listed in Appendix B would be applied to new coal leases issued.

Projected Development

It is projected that production of low sulfur coals will increase. The Deserado mine near Rangely will continue to provide fuel for the Bonanza Power Plant. A second unit is expected to be added to the power plant within the next 20 years. Once operational, the second unit would double the current rate of production. As their current reserves are depleted, it is expected they will expand their mine into adjacent areas.

Implementation

Coal leases are issued through the competitive leasing process. In previous land use planning documents, leasing was based on production goals from delineated tracts within defined coal regions. The competitive leasing process was dropped in the 1980s in favor of leasing on application.

Leasing on application involves the submittal of an application, preparation of an environmental analysis document, a public hearing, and consultation with the Colorado State Governor. If the application satisfactorily meets the requirements of these steps, a lease sale is held subject to *43 CFR 3422*.

Surface stipulations listed in Appendix B would be applied to the lands identified as available for coal leasing until they are leased. The stipulations would then be incorporated into the mine plan through mitigation developed jointly between the lessee, BLM, and the State of Colorado.

MINERAL MATERIALS MANAGEMENT

Management

Certain BLM lands in the resource area would be unavailable for mineral materials disposal. Some would be unavailable because of laws that prevent disposal (nondiscretionary) and others would be unavailable based on land use conflicts analyzed in this RMP (discretionary). The remaining lands would be available for mineral materials disposal subject to surface stipulations (see Appendix B). Table 2-12 lists, by alternative, availability of lands for mineral materials disposal.

Table 2-12. Availability of Lands for Mineral Materials Disposal (Acres)

Availability	Alt A	Alt B	Alt C	Alt D
Open[1/]	1,710,370	1,690,970	830,650	1,643,480
Closed[2/]	114,660	134,070	994,390	181,560

[1/] Includes 369,170 acres of split estate land.
[2/] Does not include the three WSAs not recommended for wilderness designation (39,940 acres) that are presently closed under wilderness Interim Management Guidelines.

Lands Unavailable for Mineral Materials Management. Presently, the six wilderness study areas (WSAs) in the White River Resource Area, totaling 81,190 acres, are unavailable for mineral materials disposal pursuant to the wilderness *Interim Management Policy Guidelines*. This is true under all alternatives. Of the six WSAs, only those designated wilderness will be closed to leasing following congressional action on wilderness recommendations (see Wilderness Management Section). For purposes of analysis it was assumed that only Bull Canyon, Willow Creek, and Skull Creek WSAs would be designated as wilderness. This assumption is carried forward under all alternatives.

The no surface occupancy (NSO) stipulation areas identified in this RMP and listed in Appendix B and the proposed withdrawn areas listed in Appendix H would also be closed to mineral materials disposal. The remaining lands would be available for disposal subject to CSU and TL stipulations listed in Appendix B. Table 2-13 lists, by alternative, the acres that would be closed to mineral materials disposal following wilderness interim management.

Table 2-13. BLM and Split-Estate Lands Closed to Mineral Material Disposal

Location or Resource of Concern	Reason for closure	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
1. Recommended WSAs (Bull Canyon, Skull Creek, Willow Creek WSAs)[1/]	wilderness withdrawal	41,250	41,250	41,250	41,250
2. Landslide areas (Baxter Pass and Douglas Pass areas) and fragile soils	NSO	7,200	N/A	830,050	35,700
3. Raptors (including bald eagles)	NSO	4,870	32,100	32,100	32,100
4. Sage grouse	NSO	330	5,490	5,490	5,490
5. Important wildlife watering area	NSO	810	N/A	N/A	N/A
6. Colorado River cutthroat trout habitat	NSO	4,560	N/A	N/A	N/A
7. Active beaver colonies	NSO	420	N/A	N/A	N/A
8. Oak Ridge State Wildlife Area	NSO	N/A	N/A	9,300	N/A
9. Designated ACECs - Dudley Bluffs, Yanks Gulch/Upper Greasewood Creek	NSO	N/A	N/A	4,310	N/A
10. Designated ACEC - South Cathedral Bluffs	NSO	320	320	320	N/A
11. Designated ACEC - Raven Ridge	NSO	2,090	2,090	2,090	2,090
12. Proposed ACECs - Ryan Gulch, Duck Creek	NSO	N/A	N/A	4,870	N/A[2/]
13. Proposed ACECs - Raven Ridge addition, South Cathedral Bluffs Addition, Moosehead Mountain, Black Gulch, Coal Draw	NSO	N/A	N/A	15,480	15,480
14. Duck Creek Wickiup Site (In Duck Creek ACEC)	NSO	3	3	N/A	3
15. Known T/E plant habitat	NSO	1,440	1,440	1,440	1,440
16. Potential T/E plant habitat, plants candidate for listing, Colorado sensitive plants, RVA locations	NSO/ withdrawal	N/A	45,400	45,400	45,400
17. Moosehead Road Closure area	NSO	N/A	N/A	6,260	6,260

Table 2-13 continued

Location or Resource of Concern	Reason for closure	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
1. Recommended WSAs (Bull Canyon, Skull Creek, Willow Creek WSAs)[1/]	wilderness withdrawal	41,250	41,250	41,250	41,250
Total Proposed Closures		63,290	128,090	998,360	185,210

[1/]Assumes only Bull Canyon, Willow Creek, and Skull Creek WSAs will be designated as wilderness and, therefore, closed to disposal.

Lands Available for Mineral Materials Disposal. All BLM lands available for mineral materials disposal would be subject to TL and CSU surface stipulations listed in Appendix B. Table 2-14 lists the acres that would be available for mineral materials extraction subject to CSU and TL stipulations.

Table 2-14. Available for Mineral Materials Disposal with CSU and TL Stipulations

Reason for Stipulation	Stip.	Alt A	Alt B	Alt C	Alt D
Fragile soil/steep slopes >35%	CSU	N/A	N/A	N/A	484,000
Noxious weeds	CSU	N/A	N/A	660,110	660,110
Riparian areas	CSU	410	410	410	410
ACECs - Deer Gulch, Lower Greasewood Creek, Dudley Bluffs, Yanks Gulch/Upper Greasewood Creek, Ryan Gulch, North Cathedral Bluffs, Soldier Creek, Texas-Missouri Evacuation Creek, East Douglas Creek, Duck Creek[1/]	CSU	6,650	8,890	81,320	58,810
ACECs - White River Riparian, Coal Oil Rim, Oil Spring Mountain[2/]	CSU	N/A	N/A	22,420	22,420
Black-footed ferret	CSU	N/A	58,790	58,790	58,790
Bald eagle	CSU	N/A	N/A	6,720	6,720
Colorado cutthroat trout	CSU	4,560	N/A	67,830	67,830
Canyon Pintado National Register District	CSU	N/A	N/A	16,040	16,040
Harper's Corner Road Scenic Easement	CSU	2,530	2,530	2,530	2,530
Big game	TL	532,230	491,450	1,201,610	987,060
Raptor	TL	41,000	148,070	148,070	148,070
Grouse lek	TL	6,960	6,960	91,690	91,690
Bald eagle habitat	TL	11,680	4,840	4,840	4,840

Note: Columns cannot be totaled because many stipulations overlap one another.

[1/]The sensitive and T/E plants, the remnant vegetation associations (RVAs), and cultural sites within the ACEC would be NSO; the remainder of the ACEC would be CSU.

[2/]The entire ACEC would be CSU.

Under Alternatives B and D, potentially suitable sand and gravel deposits in the Rangely area would be classified as high mineral material demand areas. Mineral material deposits within these areas would be given top priority for development.

Projected Development. The demand for mineral materials in the resource area will be low. Sources of mineral materials of equal or higher quality are better located elsewhere, such as on private lands, for large commercial development.

Implementation

Environmental analysis would be done on all applications for mineral material disposal. Closed areas would be considered for mineral materials disposal if the NSO stipulation could be excepted through the environmental analysis process and if a suitable location could be found through an on-the-ground survey. Available areas would be subject to CSU and TL stipulations listed in Appendix B until approval of a mine plan. CSU and TL stipulations would be incorporated into the mine plan through conditions of approval and mitigation measures.

LOCATABLE MINERALS MANAGEMENT

Management

Availability. Under all alternatives, BLM lands not withdrawn or segregated from mineral entry under the *Mining Law of 1872* would be open to mining claim location. Surface stipulations listed in Appendix B would be applied to these lands when a notice or plan is submitted under *43 CFR 3800*. Table 2-15 lists the acres open and closed to location under the mining law for each alternative. Table 2-16 provides the acreage of existing and proposed withdrawal areas by alternative. Under Alternative D, all remaining oil shale mining claims would be processed to patent or contest by the year 2000.

Table 2-15. Availability of BLM Lands for Mineral Entry

Availability	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Open to Location[1/]	1,283,510	1,777,590	1,250,330	1,261,970
Closed to Location	537,390	40,730	570,570	558,930

[1/]Includes 192,870 acres of split estate lands subject to the provisions of the *Stock Raising Homestead Act*.

Table 2-16. Existing and Proposed Locatable Mineral Withdrawals on BLM Lands

Area and Reason for Withdrawal	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Existing Withdrawals				
Oil shale withdrawal	625,400	N/A[1/]	625,400	625,400
Coal withdrawals of 1910 (closed to nonmetaliferous minerals only)	366,570	N/A[1/]	366,570	366,570
Classification and Multiple Use Act	2,340	N/A[1/]	2,340	N/A[1/]
Water reserves (closed to nonmetaliferous minerals only)	5,480	N/A[1/]	5,480	5,480

Table 2-16 continued

Area and Reason for Withdrawal	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Proposed Withdrawals				
Wilderness withdrawal - Bull Canyon, Willow Creek, and Skull Creek Wilderness Areas[2/]	41,250	41,250	41,250	41,250
T/E Plant withdrawals:				
a. Inside existing oil shale withdrawal	N/A[3/]	42,460[4/]	N/A[3/]	N/A[3/]
b. Outside existing oil shale withdrawal (potential T/E habitat on the western boundary of the oil shale withdrawal plus Raven Ridge Designated and Proposed ACECs)	N/A	1,580	1,580	1,580
Oak Ridge State Wildlife Area	N/A[5/]	N /A[5/]	9,300	N/A[5/]
Moosehead Mountain Road Closure Area	N/A[5/]	N/A[5/]	6,260	N/A[5/]
National Register of Historic Places (NRHP) Sites (Canyon Pintado)	N/A[5/]	N/A[5/]	16,040	16,040
Total	1,041,040	85,290	1,074,220	1,056,320

[1/]Would be revoked under this alternative.
[2/]Assumes Bull Canyon, Willow Creek, and Skull Creek WSAs and additional land outside the boundaries of the WSAs will be designated as wilderness (see Wilderness Section, this chapter, and Appendix E).
[3/]Included in the existing oil shale withdrawal.
[4/]Oil shale withdrawal would be revoked. T/E plant habitat would be withdrawn.
[5/]None proposed under this alternative.

Projected Development. The potential for development of locatable minerals is very low.

Implementation

The decision to open areas to location and to continue closures on existing withdrawals would become effective upon signature of the approved RMP and record of decision. In areas identified as open to location, mining claimants would be required to notify the BLM prior to developing a mining claim, as required under *43 CFR 3800*. Mining claim development would be subject to surface stipulations listed in Appendix B.

The decision to recommend additional withdrawals would become effective upon signature of the approved RMP and record of decision. The proposed withdrawals (except recommended wilderness areas) would be open until formally withdrawn from the operation of the general mining laws. To do this, BLM would petition the Secretary of the Interior to withdraw the lands. The wilderness areas would be closed upon designation by Congress. Mining claims within WSAs would be subject to *Interim Management Policy Guidelines*.

HAZARDOUS MATERIALS MANAGEMENT

Management

Management would be the same under all alternatives: The BLM would comply with all federal and applicable state environmental laws and regulations pertaining to hazardous substances. Actions would be taken to minimize wastes, prevent pollution generated or released on BLM lands, and

to minimize the generation, transportation, storage and disposal of hazardous wastes resulting from BLM-approved projects.

The BLM would manage all releases or threatened releases on or affecting BLM lands, providing for aggressive cleanup and restoration of contaminated BLM lands. All potentially responsible parties would be sought. The potentially responsible parties would be required to conduct site assessments and provide remediation. Where this could not be effectively accomplished, the costs of such actions would be recovered through appropriate civil/criminal court action under applicable environmental laws.

The BLM would take an active role in developing and implementing strategies to minimize waste and prevent pollution on BLM lands and facilities.

Implementation

Implementation would be the same under all alternatives: Locations of hazardous wastes on BLM lands would be identified through ongoing inventory. High-risk uses of the BLM lands would not be authorized, and unavoidable risks would be managed so as to minimize threats to public health and the environment.

The use of BLM lands for disposal of solid wastes or the treatment, storage, or disposal of hazardous wastes would be prohibited. A demonstrated need for such lands would be reviewed on a case-by-case basis, and where the proposed sites meet all applicable geologic, hydrologic, soil-related, and other applicable environmental requirements, the lands would be conveyed under proper authority, prior to use, for disposal activities.

BLM land users would be urged to include pollution prevention considerations into the siting, design, construction, and operation of their facilities. Disclosure of the use and disposal of hazardous materials would be required for all BLM actions and authorized uses of the BLM lands.

The BLM would avoid generating or accumulating hazardous wastes. Wastes would be disposed of only at treatment/storage/disposal facilities that are on the Environmental Protection Agency's most current list of approved facilities. The disposal facilities would be ones that had been used in the past by the BLM. The BLM would keep up-to-date inventories of applicable hazardous materials and would closely coordinate with appropriate local emergency planning committees.

Suitable sites would be identified for bioremediation activities. These sites would be located near major oil and gas development areas such as the White River Dome, Elk Springs, and Rangely. The sites would be located where geologic, hydrologic, and soil-related conditions are conducive to effective bioremediation activities and where other resource values would not be adversely affected.

PLANT COMMUNITIES MANAGEMENT

Management

Ecological Site Inventory and Desired Plant Communities. Under all alternatives, ecological site inventories would be conducted on rangelands and grazable woodland plant communities to determine the ecological status of the existing plant communities. The inventory would be used to determine the potential plant communities that could be supported on a specific site. Of the several plant communities that could be supported on a site, the plant community that would best meet land use objectives would be selected as the desired plant community (DPC).

Desired plant communities would be specified in integrated activity plans or similar activity plans prepared following publication of the approved RMP. At a minimum, the selected DPC would have to conserve the potential of the site to produce vegetation on a sustainable basis. It also would have to provide a combination of plant species that would achieve a healthy system as determined by the rangeland health evaluation matrix (Table 2-17).

ECOLOGICAL STATUS

The present state of vegetation of a range site in relation to the potential natural community for the site. Ecological status is use independent. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of the potential natural community. The four ecological status classes correspond to 0-25, 26-50, 51-75, or 76-200 percent similarity to the potential natural community and are called: early-seral, mid-seral, late-seral, and potential natural community, respectively.

The potential natural community is the biotic community that would become established if all successional sequences were completed without interferences by man under the present environmental conditions. Natural disturbances are inherent in development. Includes naturalized non-native species.

Table 2-17. Rangeland Health Evaluation Matrix

Indicator	Healthy	At Risk	Unhealthy
Phase 1: Soil stability and watershed function			
A-horizon	Present and distribution unfragmented	Present but fragmented distribution developing	Absent, or present only in association prominent plants or with other obstructions
Pedestaling	No pedestaling of plants or rocks	Pedestals present, but on mature plants only; no roots exposed	Most plants and rocks pedestaled; roots exposed
Rills and gullies	Absent, or with blunted and muted features	Small, embryonic, and not connected into a dendritic pattern	Well defined, actively expanding, dendritic pattern established
Scouring or sheet erosion	No visible scouring or sheet erosion	Patches of bare soil or scours developing	Bare areas and scours well developed and contiguous
Sedimentation or dunes	No visible soil deposition	Soil accumulating around plants or small obstructions	Soil accumulating in large barren deposits or dunes or behind large obstructions
Phase 2: Distribution of nutrient cycling and energy flow			
Distribution of plants	Plants well distributed across site	Plant distribution becoming fragmented	Plants clumped, often in association with prominent individuals; large bare areas between clumps
Litter distribution and incorporation	Uniform across site	Becoming associated with prominent plants or other obstructions	Litter largely absent
Root distribution	Community structure results in rooting throughout the available soil profile	Community structure results in absence of roots from portions of the available soil profile	Community structure results in rooting in only one portion of the available soil profile
Distribution of photosynthesis	Photosynthetic activity occurs throughout the period suitable for plant growth	Most photosynthetic activity occurs during one portion of the period suitable for plant growth	Little or no photosynthetic activity on location during most of the period suitable for plant growth

Table 2-17 continued

Indicator	Healthy	At Risk	Unhealthy
Phase 3: Recovery mechanisms			
Age-class distribution	Distribution reflects all species	Seedlings and young plants missing	Primarily old or deteriorating plants present
Plant vigor	Plants display normal growth form	Plants developing abnormal growth form	Most plants in abnormal growth form
Germination macrosite	Microsites present and distributed across the site	Developing crusts, soil movement, or other factors degrading microsites; developing crusts are fragile	Soil movement or crusting sufficient to inhibit most germination and seeding establishment

Source: *Rangeland Health*, National Research Council, 1994.

Goals for Plant Communities. Table 2-18 lists goals for some types of plant communities. These goals would be considered in the selection DPCs. Under Alternative A, the acceptable DPC goals would be an ecological status of mid-seral or higher on rangelands and grazable woodlands. Plant communities in a high- or mid-seral ecological status would be maintained, and plant communities in low-seral ecological status would be improved to at least a mid-seral ecological status.

Under Alternative B, the acceptable DPC goals would be an ecological status of high-seral for all rangeland plant communities with the exception of mountain shrub rangelands. Acceptable DPC goals for mountain shrub rangelands would be an ecological status of mid-seral or higher. Present woodland plant communities in ACECs, WSAs, and RVAs would be managed as the DPC. No DPC would be selected for woodlands outside these designated areas.

Under Alternatives C and D, acceptable DPC goals would be the same as those described for Alternative B with the exception of specified wildlife habitat areas where specific cover types are needed. The required cover type in those wildlife habitat areas would be the DPC. The ecological status of a DPC in specified wildlife habitat areas could be lower than that desired under Alternative B. If the required cover types occurred within a plant community having a lower-than-desired ecological status, the DPC would be managed, at a minimum, to maintain an at risk rating (Table 2-17) and have a stable to improving trend in ecological status.

Table 2-18. Desired Plant Community Goals

Alternative A	Alternative B	Alternative C	Alternative D
Rangelands - Grassland, Saltbush, Greasewood, and Sagebrush Plant Communities			
Maintain present plant composition on high seral and mid seral rangelands as DPC.	Manage the present plant composition on all areas occupied by the potential natural community (PNC) or a high-seral plant community as DPC.	Same as Alternative B except: Manage the present plant composition as DPC on sagebrush rangelands in a high- to mid-seral plant community for the following: - sagebrush rangelands providing suitable deer winter ranges - sagebrush rangelands providing suitable sage grouse habitats - sagebrush rangelands providing suitable antelope habitat.	Manage present plant composition as DPC on all areas classified as: - the PNC - high-seral - sagebrush rangelands with a high- to mid-seral plant community providing suitable habitat for deer winter range, sage grouse, and antelope.

Table 2-18 continued

Alternative A	Alternative B	Alternative C	Alternative D
Improve plant species composition on all areas in low-seral condition.	Improve the present plant species composition to a healthy plant community within 10 years on all areas with a mid-seral and within 20 years on all areas with a low-seral plant community.	Same as Alternative B	Same as Alternative B
Rangelands - Mountain Shrub Plant Communities			
Maintain present plant composition in high seral and mid seral conditions as DPC.	Manage present plant composition on all areas occupied by PNC, high-seral, or mid-seral plant communities as DPC.	Same as Alternative B except: - Manage mature vigorous stands of deciduous shrubs on all blue grouse ranges and on all deer critical summer ranges as the DPC. - Manage younger age stands of deciduous shrubs on 30 percent of this plant community as DPC through use of compatible treatment methods.	Same as Alternative C
N/A	Improve plant composition to a healthy plant community within 10 years for all low-seral plant communities.	Same as Alternative B	Same as Alternative B
Grazable Woodlands - Pinyon-Juniper Woodland Plant Community			
Maintain present plant composition in high-seral and mid-seral conditions as DPC.	Manage present plant composition of pinyon-juniper woodlands as DPC only in ACECs, WSAs, and Remnant Vegetation Associations (RVAs). Maintain forage-producing plant communities on pinyon-juniper woodland sites that have been treated or have burned.	Manage the same as Alternative B except: Manage present plant composition as DPC in special management areas, within deer winter ranges to meet animal cover requirements, and within raptor nesting habitats.	Manage present plant composition as DPC within: (1) ACECs, WSAs, RVAs, (2) deer winter ranges to meet animal cover requirements, (3) woodland raptor nesting habitat. Manage forage-producing plant communities on pinyon-juniper woodland sites that have been treated or burned. Retreatment of these areas would be subject to appropriate wildlife mitigation.
N/A	Reduce pinyon-juniper tree component where pinyon-juniper has dominated or is invading ecological sites.	Same as Alternative B	Reduce the pinyon-juniper tree component where pinyon or juniper has dominated or is invading ecological sites.

Note: Aspen and conifer forest plant communities are discussed under the Timberlands Section, this chapter.

Projected Vegetation Disturbance and Manipulation. Under all alternatives, vegetation would be disturbed by permitted surface-disturbing activities or would be manipulated to achieve an improved ecological condition and/or improved forage production. Table 2-19 lists the acres of vegetation types projected for disturbance or manipulation over the life of the RMP (approximately 20 years). Tables 2-20 and 2-21 list the estimated amount of disturbance or manipulation that would require reclamation using the recommended seed mixes listed in Appendix A.

Under Alternatives A and B, naturalized (non-native) plant species listed in Appendix A would be used in reseeding vegetation manipulation areas, reclaimed areas, and

disturbed areas. Increased emphasis on use of native species would be encouraged throughout the resource area.

Under Alternatives C and D, only native plant species would be used for reseeding of disturbed areas within the Blue Mountain/Moosehead geographic reference area (GRA). In the remainder of the resource area, native plant species would be encouraged for reseeding disturbed areas on all healthy rangelands and grazable woodlands and on at -risk and unhealthy rangelands and grazable woodlands that are not threatened by establishment of exotic or noxious plant species. Naturalized plant species would be encouraged for reseeding on at risk and unhealthy rangelands and grazable woodlands (Table 2-21).

An estimated 50 percent of the rangeland and wildlife improvements in pinyon/juniper communities and 10 percent of rangeland and wildlife improvements in mountain shrub communities would use recommended seed mixtures for revegetation. An estimate of 90 percent of all mineral development disturbances would be revegetated at some point in time using recommended seed mixes.

Table 2-19. Projected Vegetation Disturbance and Manipulation

Geographic Reference Area/Type of Manipulation	Alt A (Acres)	Alt B (Acres)	Alts C/D (Acres)
Pinyon-Juniper			
Blue Mountain GRA:			
- Livestock/rangeland improvement	1,490	1,490	1,490
- Wildlife management	0	0	0
- Oil and gas development	30	30	30
Wolf Creek GRA:			
- Livestock/rangeland improvement	1,090	1,090	1,090
- Wildlife management	0	0	0
- Oil and gas development	280	280	280
- Coal	30	30	30
- Woodland sales	1,760	0	0
Crooked Wash GRA:			
- Livestock/rangeland improvement	2,910	2,910	2,910
- Wildlife management	0	0	0
- Oil and gas development	550	550	550
- Woodland sales	2,060	0	0
Danforth/Jensen GRA:			
- Livestock/rangeland improvement	0	0	0
- Wildlife management	390	0	0
- Oil and gas development	20	20	20
- Coal development	0	0	0

Table 2-19 continued

Geographic Reference Area/Type of Manipulation	Alt A (Acres)	Alt B (Acres)	Alts C/D (Acres)
- Woodland management	520	0	0
Piceance GRA:			
- Livestock/rangeland improvement	12,860	12,860	12,860
- Wildlife management	21,920	2,000	2,000
- Oil and gas development	1,880	1,880	1,880
- Woodland sales - Clearcut - Selective cut	 600 -	 (2,400) 7,400	 (500) 1,500
Sodium/oil shale development	620	620	620
Douglas/Cathedral GRA:			
- Livestock	5,920	5,920	5,920
- Wildlife	16,840	2,000	2,000
- Oil and gas development	8,300	8,300	8,300
- Woodland sales - Clearcut - Selective cut	 13,080 -	 (2,400) 7,200	 (400) 1,220
Total Pinyon/Juniper	93,150	54,580	42,700
Sagebrush/Greasewood			
Blue Mountain GRA:			
- Livestock/rangeland improvement - Chemical - Mechanical - Prescribed fire	 0 630 6,560	 0 630 6,560	 0 630 6,560
- Oil and gas development	120	120	120
- Wildlife management	0	1,500	1,500
Wolf Creek GRA:			
- Livestock/rangeland improvement - Chemical - Mechanical - Prescribed fire	 4,920 2,710 4,360	 4,920 2,710 4,360	 4,920 2,710 4,360
- Oil and gas development	1,000	1,000	1,000
- Wildlife management	0	(2,000)	(2,000)
- Coal development	170	170	170

Table 2-19 continued

Geographic Reference Area/Type of Manipulation	Alt A (Acres)	Alt B (Acres)	Alts C/D (Acres)
Crooked Wash GRA:			
- Livestock/rangeland improvement			
- Chemical	4,040	4,040	4,040
- Mechanical	620	620	620
- Prescribed fire	10,840	10,840	10,840
- Oil and gas development	410	410	410
- Wildlife management	-	(1,500)	(1,500)
Danforth/Jensen GRA:			
- Livestock/rangeland improvement			
- Chemical	0	0	0
- Mechanical	0	0	0
- Prescribed fire	920	920	920
- Oil and gas development	40	40	40
- Wildlife management	0	0	0
Piceance GRA:			
- Livestock/rangeland improvement			
- Chemical	6,800	6,800	6,800
- Mechanical	1,920	1,920	1,920
- Prescribed fire	24,900	24,900	24,900
- Oil and gas development	640	640	640
- Wildlife management	5,450	(4,000)	(4,000)
- Sodium/oil shale development	270	270	270
Douglas/Cathedral GRA:			
- Livestock/rangeland improvement			
- Chemical	3,360	3,360	3,360
- Mechanical	980	980	980
- Prescribed fire	5,620	5,620	5,620
- Oil and gas development	2,340	2,340	2,340
- Wildlife management	3,480	3,000	3,000
Total Sagebrush/Greasewood	93,100	88,670	88,670
Mountain Shrub			
Blue Mountain GRA:			
- Livestock/rangeland improvement			
- Chemical	0	0	0
- Mechanical	0	0	0
- Prescribed fire	4,370	4,370	4,370
- Oil and gas development	10	10	10

Table 2-19 continued

Geographic Reference Area/Type of Manipulation	Alt A (Acres)	Alt B (Acres)	Alts C/D (Acres)
- Wildlife management	0	(2,000)	(2,000)
Crooked Wash GRA:			
- Livestock/rangeland improvement			
- Chemical	0	0	0
- Mechanical	0	0	0
- Prescribed fire	0	0	0
- Oil and gas development	120	120	120
- Wildlife management	0	1,500	1,500
- Coal development	0	0	0
Danforth GRA:			
- Livestock/rangeland improvement			
- Chemical	0	0	0
- Mechanical	0	0	0
- Prescribed fire	920	920	920
- Oil and gas development	220	220	220
- Wildlife management	4,530	1,500	1,500
Piceance GRA:			
- Livestock/rangeland improvement			
- Chemical	0	0	0
- Mechanical	0	0	0
- Prescribed fire	16,960	16,960	16,960
- Oil and gas development	520	520	520
- Wildlife management	12,020	12,000	12,000
- Sodium/oil shale development	0	0	0
Douglas/Cathedral GRA:			
- Livestock/rangeland improvement			
- Chemical	0	0	0
- Mechanical	0	0	0
- Prescribed fire	5,620	5,620	5,620
- Oil and gas development	1,050	1,050	1,050
- Wildlife management	3,480	8,000	8,000
Total for Mountain Shrub	49,820	52,790	52,790

Table 2-20. Projected Reseeding Requirements on BLM Lands (Alternative A)

Plant Community	Total Acreage Manipulated	Estimated Acreage Requiring Reseeding	Percentage of Total Plant Communities
Pinyon/Juniper Woodlands			
Rangeland Improvements	24,260	12,130 (50%)	
Wildlife Habitat Improvement	39,150	19,580 (50%)	
Mineral Development	11,720	10,550 (90%)	
Total	75,130	42,260	7.0%
Sagebrush Rangelands			
Rangeland Improvements	79,170	19,800 (25%)	
Wildlife Habitat Improvement	8,940	900 (10%)	
Mineral Development	4,980	4,480 (90%)	
Total	93,090	25,180	8.2%
Mountain Shrub Rangelands			
Rangeland Improvements	27,880	2,800 (10%)	
Wildlife Habitat Improvement	20,130	2,000 (10%)	
Mineral Development	1,920	1,700 (90%)	
Total	49,930	6,500	4.0%

Note: No treatments are proposed on land within the Navel Oil Shale Reserves

Table 2-21. Projected Reseeding Requirements (Alternative B, C and D)

Type of Improvement	Total Acreage Manipulated	Estimated Acreage Requiring Reseeding	Percent of Total Plant Community
Pinyon-juniper Woodlands			
Rangeland Improvements	24,260	12,130 (50%)	
Wildlife Habitat Improvements	4,000	2,000 (50%)	
Mineral Development	11,720	10,550 (90%)	
Total	39,980	24,680	4%
Sagebrush Rangelands			
Rangeland Improvements	79,170	19,800 (25%)	
Wildlife Habitat Improvements	4,500	450 (10%)	
Mineral Development	4,980	4,480 (90%)	
Total	88,650	24,730	8%
Mountain Shrub Rangelands			
Rangeland Improvements	27,870	2,800 (10%)	
Wildlife Habitat Improvements	23,000	2,300 (10%)	
Mineral Development	1,920	1,700 (90%)	
Total	52,790	6,800	4%

Allocation of Forage. Under all alternatives, 50 percent of the annual above ground forage production would be reserved for maintenance of the plant's life cycle requirements, watershed protection, visual resource enhancement, and food and cover requirements of small game and nongame wildlife species. The remaining 50

percent of the forage base would be allocated among predominant grazing users.

Under Alternative A, allocations made in the record of decision for the 1980 White River Resource Area Grazing Management *Final Environmental Impact Statement* (Table 2-22, Alternative A) would remain the same.

Increased forage needs for the increased big game populations experienced since the 1980 allocation would be provided, as long as, the rangelands and grazable woodlands upon which the increased allocation would be based, are in a "healthy" or "at risk" rating (Table 2-23) with all "At Risk" lands having an improving trend index.

Under Alternatives B, C and D, forage allocations would remain the same as described above for Alternative A. Specific forage allocations for additional forage needs to support the proposed big game population increases under Alternatives B, C, and D would be evaluated in later integrated activity plans. Increased forage needs for wild horses under Alternatives B and C would come from current livestock forage allocations within affected herd areas.

Implementation

Activities proposed for a plant community would be analyzed to determine whether the objectives for a particular plant community could be met. Activities would be considered if they could meet the plant community objective. Activities that could not meet the plant community objective would be denied or modified so that they could meet the objective.

Ecological status would be determined following publication of the approved RMP by use of BLM ecological site inventory procedures. Specific objectives for plant communities would be developed in integrated activity plans. Priorities for inventory would be the same as those for implementation of integrated activities plans (see Integrated Activity Plan Section, Chapter 1).

Use of non-native plant species in reclamation would be addressed in site-specific project analysis.

Table 2-22. Range Forage Allocation by Geographic Reference Area

Grazing User	1981 Grazing EIS Allocation (Alternative A)				Alternative B			Alternative C			Alternative D		
	Short-Term		Long-Term		Animal Populations[1]	AUM Req'd[2]	Difference (Surplus + or Deficit-)[3]	Nr. Animal[4]	AUMs Req'd[5]	Difference (Surplus + or Deficit-)[3]	Nr. Animal[6]	AUMs Req'd[7]	Difference (Surplus + or Deficit-)[3]
	Nr. Animals	Nr. AUMs	Nr. Animals	Nr. AUMs									
Blue Mountain/Moosehead Geographic Reference Area													
Livestock	--	9,850	--	12,973	--	12,973	0	--	12,973	0	--	12,973	0
Pronghorn	7	3	7	3	17	7	-4	22	9	-6	22	9	-6
Deer	1,478	3,087	1,918	3,897	1,887	3,080	+817	2,124	3,467	+430	2,124	3,467	+430
Elk	47	148	52	156	260	1,132	-976	191	833	-677	191	833	-677
Wild Horses	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,532	13,088	1,977	17,029	2,164	17,192	-163	2,337	17,282	-253	2,337	17,282	-253
Wolf Creek/Red Wash Geographic Reference Area													
Livestock	--	19,197	--	19,197	--	19,197	0	--	19,197	0	--	19,197	0
Pronghorn	183	175	188	183	175	159	+24	223	206	-23	223	206	-23
Deer	1,007	1,067	1,314	1,354	3,821	4,483	-3,129	4,300	5,043	-3,689	4,300	5,043	-3,689
Wild Horses	0	0	0	0	0	0	0	0	0	0	0	0	0
Elk	38	165	41	173	586	1,322	-1,149	431	973	-800	431	973	-800
Total	1,228	20,604	1,543	20,907	4,582	25,161	-4,254	4,954	25,419	-4,512	4,954	25,419	-4,512
Crooked Wash/Deep Channel Geographic Reference Area													
Livestock	--	12,554	--	14,998	--	14,998	0	--	14,998	0	--	14,988	0
Pronghorn	29	21	29	21	22	11	+10	23	12	+9	23	12	+9
Deer	8,659	8,940	9,493	9,545	4,561	4,702	+4,843	4,874	5,022	+4,523	4,874	5,022	+4,523
Elk	137	380	152	405	353	1,011	-606	259	742	-337	259	742	-337

Table 2-22 continued

Grazing User	1981 Grazing EIS Allocation (Alternative A)				Alternative B			Alternative C			Alternative D		
	Short-Term		Long-Term		Animal Populations[1]	AUM Req'd[2]	Difference (Surplus + or Deficit-)[3]	Nr. Animal[4]	AUMs Req'd[5]	Difference (Surplus + or Deficit-)[3]	Nr. Animal[6]	AUMs Req'd[7]	Difference (Surplus+Deficit-)[3]
	Nr. Animals	Nr. AUMs	Nr. Animals	Nr. AUMs									
Wild Horses	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8,825	21,895	9,674	24,969	4,936	20,722	+4,247	5,156	20,774	+4,225	5,156	20,774	+4,225
Danforth Hills/Jensen Geographic Reference Area													
Livestock	--	10,924	--	10,924	--	10,924	0	--	10,924	0	--	10,924	0
Pronghorn	--	--	--	--	--	--	+381	--	--	0	--	--	0
Deer	2,439	4,646	2,599	4,813	2,132	4,432	-1,061	2,266	4,856	-43	2,266	--	-43
Elk	866	2,103	885	2,115	994	3,176	0	950	3,040	-925	950	3,040	-925
Wild Horses	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	3,305	17,673	3,484	17,852	3,126	18,532	-680	3,216	18,820	-968	3,216	18,820	-968
Piceance Basin Geographic Reference Area													
Livestock	--	44,701	--	58,410	--	58,410	0	--	58,410	0	--	58,410	0
Deer	28,889	35,739	32,435	39,187	21,816	28,830	+10,357	19,457	26,218	+12,969	19,457	26,218	+12,969
Elk	498	1,296	578	1,450	2,164	6,755	-5,305	1,378	4,294	-2,844	1,378	4,294	-2,844
Wild Horses	100	1,500	100	1,500	50	1,500	0	170	2,550	-1,050	100	1,500	0
Total	29,487	83,236	33,113	100,547	24,030	95,495	+5,052	21,005	91,472	+9,075	20,935	90,422	+10,125
Douglas/Cathedral Geographic Reference Area													
Livestock	--	29,259	--	30,306	--	29,259	0	--	29,259	0	--	29,259	0
Pronghorn	--	--	--	--	--	--	--	--	--	0	--	--	0
Deer	2,922	6,096	3,767	7,592	11,724	21,313	-13,721	9,385	17,061	-9,469	9,385	17,061	-9,469
Elk	198	653	218	705	454	1,709	-1,004	238	971	-266	238	971	-266

Table 2-22 continued

Grazing User	1981 Grazing EIS Allocation (Alternative A)				Alternative B			Alternative C			Alternative D		
	Short-Term		Long-Term		Animal Populations[1]	AUM Req'd[2]	Difference (Surplus + or Deficit-)[3]	Nr. Animal[4]	AUMs Req'd[5]	Difference (Surplus + or Deficit-)[3]	Nr. Animal[6]	AUMs Req'd[7]	Difference (Surplus+Deficit-)[3]
	Nr. Animals	Nr. AUMs	Nr. Animals	Nr. AUMs									
Wild Horses	40	600	40	600	20	600	0	150	2,250	-1,650	40	600	0
Total	3,160	36,608	4,025	39,203	12,198	52,881	-14,725	9,773	49,541	-11,385	9,663	47,891	-9,735

[1] Shows increases (1990 data) in big game animal populations
[2] AUMs needed to sustain 1990 big game populations
[3] Surplus or deficit is compared with Alternative A long-term allocations
[4] Shows Colorado Division of Wildlife (CDOW) 1991 big game population objectives and proposed increase in wild horse populations
[5] AUMs needed to sustain 1991 CDOW population objectives
[6] Shows CDOW 1991 big game population objectives
[7] AUMs needed to sustain 1991 CDOW population objectives

NOXIOUS AND PROBLEM WEED MANAGEMENT

Management

Under all alternatives, any areas on BLM lands having infestations of the following noxious weeds would be treated and managed using methods approved in *Vegetation Treatments on BLM Lands Environmental Impact Statement* (BLM 1991). Management priority would be as stated in the aforementioned EIS; i.e., preventative, biological, cultural, mechanical and chemical.

Leafy spurge (*Euphorbia esula*)
Whitetop (*Cardaria draba*)
Russian knapweed (*Acroptilion repens*)
Canada thistle (*Cirsium arvense*)
Diffuse knapweed (*C.diffusa*)
Houndstongue (*Cynoglossum officinale*)
Spotted knapweed (*C. maculosa*)
Musk thistle (*Carduus nutans*)
Yellow toadflax (*Linaria vulgaris*)
Tall whitetop (*Lepidium latifolium*)
Black henbane (*Hysocamus niger*)

Problem weed species would be managed to reduce or eliminate their composite acreage of infestation. Problem weed species include the following:

Bull thistle (*Cirsium vulgare)*
Bluebur stickseed (*Lappula redowski*)
Mullen (*Verbascum thapsus*)

All available integrated pest management techniques would be used in weed management, including biological, mechanical, and chemical control.

Under Alternatives C and D, weed-free zones on BLM lands would be designated where few or no noxious weed infestations presently occur. These zones are shown on Map 2-10 and total 497,900 acres. Table 2-23 lists stipulations that would apply in weed-free zones.

Management of weed-free zones would be incorporated in the White River Resource Weed Management Plan and would be closely coordinated with the Rio Blanco, Moffat, and Garfield County Weed Boards.

Table 2-23. Stipulations in Weed-Free Zones

Stipulation	Alt C	Alt D
All construction equipment and vehicles would be cleaned prior to entering BLM weed-free zones.	Yes	Yes
All hay, straw, unprocessed feed, or seed used in BLM weed-free zones must be certified free of specified noxious weeds listed in Colorado Weed Free Forage Certification Standards.	Yes	Yes
All authorized users of disturbed areas will be required to inventory for noxious weeds in both the spring and fall. Immediate action will be taken to suppress any noxious weeds found.	No	Yes

Implementation

The White River Resource Area Noxious Weed Management Plan would be revised following completion of the RMP. This plan will incorporate, by reference, the record of decision for the *Vegetation Treatment on BLM Lands in Thirteen Western States* EIS and the priorities established therein. The weed plan would be the guiding document for implementation. Special emphasis would be placed on cooperating with Rio Blanco County in the management of the Ninemile Hay Gulch leafy spurge project.

RIPARIAN MANAGEMENT

Management

Under all alternatives, all high and medium riparian areas would be inventoried to determine their ecological status (see Plant Communities Management Section, this chapter), functioning condition, and potential riparian plant community desired for each riparian area inventoried.

Under all alternatives, the objective would be to achieve an advanced ecological condition on all high and medium priority riparian habitats except where resource management objectives including proper functioning condition require an earlier successional stage. The goal

would be to have 75 percent of all riparian areas in the resource area in proper functioning condition by the year 2000. To do this, it is estimated that 640 acres of highand medium priority riparian areas would need to be improved.

Tables 2-24 and 2-25, respectively, list high and medium priority riparian habitats. Table 2-26 lists low priority riparian habitats. Table 2-27 lists the proposed management objectives for riparian habitats under each alternative.

FUNCTIONING CONDITIONS

Proper Functioning Condition (PFC):

Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate the stream energy of high waterflows, thereby reducing erosion and water quality filter sediment, capture bedload, and aid floodplain development; improve flood water retention groundwater recharge, develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and water depth, duration, and temperature needed for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

Nonfunctional Condition:

Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed above. The absence of physical attributes such as a floodplain where one should be are indicators of nonfunctioning condition.

Functional - At Risk:

Riparian-wetland areas that are in functioning condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Table 2-24. High Priority Riparian Habitats

Location	Proper Functioning Condition[1/ 2/]	BLM Acres of Riparian	Ecological Condition/Trend[2/]
Douglas Creek/Cathedral Geographic Reference Area			
Bear Park Creek	FAR	4.5	Mid/Stable
East Douglas Creek	PFC	60.5	Late/Improving
Main Douglas Creek	FAR	360.0	Mid/Improving
Cathedral Creek	FAR	10.8	Mid/Improving
West Creek	NON	5.0	Early/Declining
Lake Creek	FAR	8.4	Mid/Improving
Soldier Creek	NON	2.8	Mid/Declining

Table 2-24 continued

Location	Proper Functioning Condition[1] [2]	BLM Acres of Riparian	Ecological Condition/Trend[2]
Crooked Wash/Deep Channel Geographic Reference Area			
Crooked Wash	FAR	10.0	Mid-Seral/Stable
Piceance Basin Geographic Reference Area			
Cow Creek	NON	14.6	Early-Seral/Declining
No Name	NON	3.9	Early/Declining
Trapper's Creek	FAR	5.0	Mid-Seral/Improving
West Fawn Creek	FAR	3.0	Mid-Seral/Stable
Black Sulphur Creek	FAR	8.5	Late-Seral/Improving
Timber Gulch	NON	1.4	Mid-Seral/Improving
Joe Bush Gulch	NON	0.7	Early-Seral/Stable
Segar Gulch	NON	0.7	Early-Seral/Stable
Deer Gulch	PFC	1.0	Late-Seral/Stable
Yellow Creek	FAR	54.5	Mid Seral/Stable
Willow Creek	FAR	13.3	Mid/Stable
Brush Creek	NON	4.2	Mid/Declining
Clear Creek	NON	4.0	Mid/Declining
Blue Mountain/Moosehead Geographic Reference Area			
Meadow Creek	FAR	6.5	Mid/Stable
Turner Creek	FAR	9.4	Mid/Stable
Bull Canyon	FAR	2.3	Late/Stable
Willow Creek	FAR	2.3	Late/Stable
Danforth Hills/Jensen Geographic Reference Area			
Big Beaver Creek	PFC	2.0	Late/Stable
Wolf Creek/Red Wash Geographic Reference Area			
Divide Creek Reservoir	PFC	4.0	Late/Stable
White River Riparian Geographic Reference Area			
White River	FAR	116	Late/Stable
Total		719.3	N/A

[1] PFC = Proper Functioning Condition; FAR = Functional-At Risk; NON = Non-functional Condition

[2] Based on professional judgment of specialists trained in functional conditions and/or ecological classification.

Table 2-25. Medium Priority Riparian Habitats

Location	Proper Functioning Condition[1/ 2/]	BLM Acres of Riparian	Ecological Condition/Trend[2/]
Douglas Creek/ Geographic Reference Area			
Gillam Draw	NON	5.5	Early/Stable
Sucker/Willow Creek	FAR	5.5	Mid/Declining
West Douglas Creek	FAR	2.7	Mid/Stable
Missouri Creek	NON	17.6	Fair/Declining
West Evacuation Creek	FAR	1.4	Mid/Stable
East Evacuation Creek	FAR	7.0	Mid/Stable
Foundation Creek	FAR	4.6	Mid/Stable
Bitter Creek	FAR	3.6	Mid/Stable
Spring Creek	NON	5.9	Early/Stable
Crooked Wash/Deep Channel Geographic Reference Area			
Deep Channel Creek	FAR	1.7	Mid/Stable
Tschuddi Gulch	FAR	6.1	Mid/Improving
Scenery Gulch	NON	0.5	Fair/Improving
Black's Gulch	NON	1.9	Fair/Stable
Piceance Basin Geographic Reference Area			
Piceance Creek	FAR	30	Mid/Stable
West Branch Cow Creek	NON	0.5	Mid/Declining
Bear Creek	NON	3.0	Early/Stable
Fawn Creek	FAR	3.7	Mid/Stable
Yankee Gulch	FAR	3.9	Mid/Stable
Dry Fork Piceance Creek	NON	2.8	Early/Stable
Eureka Creek	NON	1.4	Mid/Stable
Hay Gulch	NON	0.7	Early/Stable
Davis Gulch	FAR	1.0	Mid/Stable
Greasewood Gulch	FAR	2.4	Late/Stable
Little Corral	FAR	7.8	Early/Stable

Table 2-25 continued

Location	Proper Functioning Condition[1/ 2/]	BLM Acres of Riparian	Ecological Condition/Trend[2/]
Dark Canyon	FAR	4.8	Early/Stable
Cole Gulch	FAR	0.5	Mid/Stable
Hatch Gulch	FAR	0.5	Mid/Stable
Collins Gulch	FAR	0.7	Mid/Stable
Cascade Gulch	FAR	0.7	Mid/Stable
Thirteen Mile	FAR	0.6	Mid/Stable
Fourteen Mile	FAR	0.4	Late/Stable
Ryan Gulch	NON	3.4	Early/Stable
Smizer Gulch	NON	2.6	Early/Stable
Galloway Gulch	NON	2.3	Early/Stable
Stake Spring Draw	NON	5.3	Early/Stable
Big Duck Creek	NON	3.1	Early/Stable
Black Cabin Gulch	NON	1.0	Early/Stable
Blue Mountain/Moosehead Geographic Reference Area			
Buckwater Draw	FAR	0.7	Mid/Stable
K Creek	FAR	0.8	Mid/Stable
Wolf Creek	FAR	12.9	Unknown
Burdette	FAR	1.4	Unknown
Bear Canyon	FAR	3.5	Unknown
Twin Wash	FAR	2.2	Unknown
Little Red Wash	FAR	1.4	Unknown
Spike Hallow	NON	0.9	Unknown
Mud Springs	NON	0.4	Unknown
Red Rock	NON	0.4	Unknown
Box Canyon	FAR	1.4	Unknown

Table 2-25 continued

Location	Proper Functioning Condition[1/ 2/]	BLM Acres of Riparian	Ecological Condition/Trend[2/]
Danforth Hills/Jensen Geographic Reference Area			
East Fork Wilson Creek	FAR	1.5	Mid/Stable
West Fork Good Spring Creek	FAR	2.4	Mid/Stable
East Fork Flag Creek	FAR	2.0	Late/Stable
Wolf Creek/Red Wash Geographic Reference Area			
Stinking Water Creek	PFC	7.9	Late/Stable
Peterson Draw	FAR	0.7	Late/Stable
Horse Draw	FAR	4.0	Good/Stable
Three Springs Draw	FAR	0.7	Late/Improving
Wolf Creek	NON	19.1	Mid/Stable
Red Wash	NON	11.0	Mid/Improving
Total		221.9	N/A

[1/] PFC = Proper Functioning Condition; FAR = Functional-At Risk; NON = Non-functional Condition

[2/] Based on professional judgment of specialists trained in functional conditions and/or ecological classification.

Table 2-26. Low Priority Riparian

Location	Proper Functioning Condition [1/ 2/]	BLM Acres of Riparian	Ecological Condition/Trend[2/]
Piceance Basin GRA			
East Hunter Creek	NON	2.0	Unknown
West Hunter Creek	FAR	3.5	"
Middle Fork Stewart	FAR	0.5	"
Post Gulch	NON	0.3	"
Kendall Gulch	FAR	0.7	"
Main Prong	FAR	0.7	"
McCarthy Gulch	NON	1.0	"
Schutte Gulch	NON	1.1	"
Story Gulch	NON	0.5	"

Table 2-26 continued

Location	Proper Functioning Condition [1] [2]	BLM Acres of Riparian	Ecological Condition/Trend[2]
Dry Gulch	NON	1.0	"
Wagon Road	NON	1.3	"
Box Elder	NON	2.1	"
Corral Gulch	NON	0.9	"
Douglas Creek GRA			
Red Cedar Spring	FAR	2.0	Unknown
Texas Creek	NON	1.1	"
Trail Canyon	NON	0.9	"
Big Spring	NON	1.7	"
Whiskey Creek	FAR	1.9	"
Davis Creek	FAR	0.5	"
Wolf Creek GRA			
Divide Creek	NON	0.9	Unknown
Box Elder	NON	0.7	"
Skull Creek	FAR	0.5	"
Crooked Wash GRA			
Oil Well	NON	0.5	Unknown
Price Creek	FAR	0.5	"
Total		26.8	

[1] PFC = Proper Functioning Condition; FAR = Functional-At Risk; NON = Non-functional Condition

[2] Based on professional judgment of specialists trained in functional conditions and/or ecological classification.

Table 2-27. Proposed Management Objectives in Riparian Areas

Alternative A	Alternative B	Alternative C	Alternative D
As decided in the Piceance Basin RMP, streambank stabilization projects would be initiated.	Same as Alternative A	Same as Alternative A	Same as Alternative A
As decided in the Piceance Basin RMP, systems and land improvements that optimize animal distribution and reduce livestock concentration in important riparian areas would be developed.	Same as Alternative A	Same as Alternative A	Same as Alternative A
Wildlife habitat improvements recommended in the Piceance Basin RMP would continue to be developed.	Same as Alternative A	Same as Alternative A	Same as Alternative A
As decided in the White River MFP, riparian habitat on Soldier Creek and Lake Creek would be fenced.	Fenced exclosure on Trapper's Creek would be maintained to exclude livestock until riparian objectives are achieved.	Same as Alternative B	Same as Alternative B
As decided in the White River Management Framework Plan (MFP), a total of 72 acres of riparian habitat on Roan Plateau would be fenced and moderate livestock use inside fenced area would be allowed. On all other riparian habitats, livestock grazing would be managed to improve riparian zones and, on a case-by-case basis, riparian zones would be fenced if improvement did not meet objectives.	The need for additional exclosures and other riparian improvement projects would be identified during development of activity plans and allotment management plans that would address the improvement objectives developed for priority riparian habitats. These plans would use best management practices needed to achieve desired improvement on a particular riparian habitat.	Same as Alternative B	Same as Alternative B
All impacting land use activities would be required to minimize impacts to riparian habitats sufficient to meet minimum objectives for all high priority riparian habitats.	All impacting land use activities would be required to minimize impacts to riparian habitats sufficient to meet minimum objectives developed for high and medium priority riparian habitats.	All impacting land use activities would be required to avoid all high, medium and low priority riparian habitats with any new activity and relocate impacting existing facilities outside high and medium priority riparian habitats.	Same as Alternative C
Motorized travel would be allowed only on existing roads and trails within all high priority riparian habitats.	Motorized travel in riparian habitats would be allowed only on existing roads and trails.	Riparian habitats would be closed to all motorized vehicles. Existing roads would be relocated outside of riparian zones.	Same as Alternative C

Table 2-27 continued

Alternative A	Alternative B	Alternative C	Alternative D
N/A	Grazing practices (such as best management practices) that protect public health and welfare, maintain, restore, or improve water quality; and result in water quality that meets or exceeds state water quality standards will be implemented through conditions of permits and leases for all high priority riparian habitats.	Grazing practices (such as best management practices) that protect public health and welfare; maintain, restore, or improve water quality; and result in water quality that meets or exceeds state water quality standards will be implemented through conditions of permits and leases for all riparian habitats.	Grazing practices (such as best management practices) that protect public health and welfare; maintain, restore, or improve water quality; and result in water quality that meets or exceeds state water quality standards will be implemented through conditions of permits and leases for all high and medium priority and all non-functional low priority riparian habitats.
N/A	Where assessments or other data reveal that key resources or watershed functioning requirements are not being met because of livestock overuse, the authorized officer will adjust grazing use before the next grazing season and may require total rest on all high and medium priority riparian habitats which are in a non-functioning condition.	Where assessments or other data reveal that key resources or watershed functioning requirements are not being met because of livestock overuse, the authorized officer will adjust grazing use before the next grazing season and may require total rest on all riparian habitats in a non-functioning condition or functioning at risk.	Where assessments or other data reveal that key resources or watershed functioning requirements are not being met because of livestock overuse the authorized officer will adjust grazing use before the next grazing season and may require total rest on all non-functioning and all high and medium priority habitats functioning at risk.
N/A	Springs, seeps, and other projects affecting water and related resources will be designed to maintain or improve the ecological and hydrological values of those sites within all high and medium priority riparian habitats.	Springs, seeps, and other projects affecting water and related resources will be designed to maintain or improve the ecological and hydrological values of those sites within all riparian habitats.	Springs, seeps, and other projects affecting water and related resources will be designed to maintain or improve the ecological and hydrological values of those sites within all riparian habitats.
N/A	Riparian-wetland objectives will be met by locating livestock management facilities (corrals or holding facilities, well, pipelines, fences) or livestock management practices (salting and supplemental feeding) outside riparian-wetland areas. Where existing livestock management facilities or practices do not meet management objectives, BLM will take actions, which may include relocating or removing facilities or practices within high and medium priority riparian habitats.	Riparian-wetland objectives will be met by locating livestock management facilities (corrals or holding facilities, well pipelines, fences) or livestock management practices (salting and supplemental feeding) outside riparian-wetland areas. Where existing livestock management facilities or practices do not meet management objectives, BLM will take actions, which may include relocating or removing facilities or practices within all riparian habitats.	Riparian-wetland objectives will be met by locating livestock management facilities (corrals or holding facilities, well pipelines, fences) or livestock management practices (salting and supplemental feeding) outside riparian-wetland areas. Where existing livestock management facilities or practices do not meet management objectives, BLM will take actions, which may include relocating or removing facilities or practices within all riparian habitats that are non-functioning or functioning at risk.

Table 2-27 continued

Alternative A	Alternative B	Alternative C	Alternative D
N/A	Use or residual vegetation targets will be established for all high and medium priority riparian habitats to do the following: (a) Maintain, improve, or restore both herbaceous and woody species (where present or potential exists) to healthy and vigorous condition and facilitate reproduction and maintenance of different age classes in the desired riparian-wetland and aquatic plant communities. (b) Leave enough vegetation biomass and plant residue (including woody debris) to allow adequate sediment filtering and dissipation of stream energy for bank protection.	Use or residual vegetation targets will be established for all riparian habitats to do the following: (a) Maintain, improve, or restore both herbaceous and woody species (where present or potential exists) to healthy and vigorous condition and facilitate reproduction and maintenance of different age classes in the desired riparian-wetland and aquatic plant communities. (b) Leave enough vegetation biomass and plant residue (including woody debris)to allow adequate sediment filtering an dissipation of stream energy for bank protection.	Use or residual vegetation targets will be established for all high and medium priority and all non-functioning riparian habitats to do the following: (a) Maintain, improve, or restore both herbaceous and woody species (where present or potential exists) to healthy and vigorous condition and facilitate reproduction and maintenance of different age classes in the desired riparian-wetland and aquatic plant communities. (b) Leave enough vegetation biomass and plant residue (including woody debris) to allow adequate sediment filtering and dissipation of stream energy for bank protection.

Under all alternatives, forest product permits would not be issued within riparian areas. Under alternative D, remedial mitigation would be required for existing facilities impacting riparian habitats. New land-use activities would be required to avoid riparian areas if possible, and impacts would be mitigated in a manner that would meet minimum objectives for the system if the riparian areas could not be avoided.

Implementation

Specific resource management objectives for riparian habitats would be developed as integrated activity plans are developed (see Integrated Activity Plan Section, Chapter 1).

Under Alternative A, activity plans prepared for other resource activities such as livestock grazing would consider treatments needed to protect or rehabilitate riparian areas. Riparian protection also would be considered in project plans.

Under Alternatives B, C, and D, activity plans that incorporate the objectives listed in Table 2-27 would be prepared for riparian areas identified as high and medium priority habitats. The plans would outline the management needed to meet the objectives. The order in which grazing and vegetation management actions would be applied would be based on the following criteria:

- Fisheries present
- Special status species habitat
- Potential for system improvement
- Potential for persistent water flow
- System, condition, trend, and vulnerability
- Management potential
- Amount of BLM land
- Presence of other riparian-dependent values

Under Alternative D, riparian activity plans would be incorporated in integrated activity plans as they are prepared. Map 1-3, Chapter 1, shows areas identified for integrated activity plans.

Under all alternatives, activities proposed within riparian habitats would be analyzed to determine whether the objectives listed in Table 2-27 could be met. Activities that could meet objectives would be considered; those that could not would be modified to meet objectives or would be denied.

THREATENED AND ENDANGERED PLANT MANAGEMENT

Management

No Surface Occupancy Stipulation. Under Alternative A, a no surface occupancy (NSO) stipulation would be placed on *oil and gas leases* issued within *known habitat* (Map 2-11 at the end of the chapter) of federally-listed threatened or endangered (T/E) plants (approximately 1,440 acres). The NSO stipulation would not apply to *potential T/E habitat*. The NSO stipulation also would not apply to other surface-disturbing activities.

Under Alternatives B, C, and D, a NSO stipulation would be placed *on all surface-disturbing activities* proposed within *known and potential* habitat of federally-listed T/E plants and *candidate* T/E habitat (approximately 45,400 acres). New T/E plant habitat mapped as a result of future surveys would also be protected by an NSO stipulation. This stipulation would apply to *all surface-disturbing activities* within *known and potential* habitat.

The NSO stipulation could be excepted by the area manager if a suitable location could be located by an on-the-ground survey and if an environmental assessment would find the plants would not be affected. Informal consultation with U.S. Fish and Wildlife Service would be conducted during preparation of the environmental assessment. Formal consultation with the U.S. Fish and Wildlife Service would be conducted if the environmental assessment disclosed a finding of possible impact to a listed species.

Locatable Minerals Closures. Under Alternative A, the area within the existing oil shale withdrawal would remain closed to mineral entry. T/E plant habitat outside the oil shale withdrawal would remain open to mineral entry.

Under Alternative B, the oil shale withdrawal would be revoked; therefore, *known and potential* T/E plant habitat inside and outside the revoked oil shale withdrawal would be withdrawn and closed to mineral entry.

Under Alternatives C and D, *known and potential T/E plant habitat* that occurs outside the western boundary of the oil shale withdrawal plus the entire Raven Ridge designated and proposed ACECs would be withdrawn and closed to mineral entry. The known and potential habitat inside the oil shale withdrawal would not be withdrawn because the oil shale withdrawal would remain in effect.

Mineral Materials. Under Alternative A, *known* T/E plant habitat would be closed to mineral materials. *Potential* T/E plant habitat would be open to mineral materials. Under Alternatives B, C, and D, *known and potential* T/E habitat would be closed to mineral materials.

Roads and Public Utilities. Under Alternatives A, existing public utilities (pipelines, power lines, and communication facilities) in *known and potential* T/E habitat would not be relocated.

Under Alternatives B, C, and D, existing public utilities within *known and potential* T/E habitat would be relocated. All *known and potential* T/E habitat would be exclusion areas for public utilities.

Motorized Vehicle Travel. Under Alternatives A and B, motorized vehicle travel within three designated ACECs would be allowed only on existing roads and trails. No restrictions would be placed on off-road travel outside of the three ACECs.

Under Alternatives C, motorized vehicle travel within existing and proposed ACECs for T/E plants would be prohibited. Under Alternative D, motorized vehicle travel would be allowed only on designated roads and trails throughout the resource area. Off-road travel would be prohibited (see Travel Management Section, this chapter) under both Alternatives C and D, and roads not designated for use would be abandoned and reclaimed.

Designation of ACECs for T/E Plants. Under all alternatives, three areas (totaling 6,430 acres of BLM and split estate land) occupied by T/E plants or candidate T/E plants would continue to be designated as areas of critical environmental concern (ACECs) and Colorado natural areas. Under Alternatives C and D, three additional areas (totaling 8,230 acres of BLM and split estate land) occupied by T/E plants or candidate T/E plants would be designated as ACECs (see ACEC Section, this chapter). The designated and proposed Raven Ridge ACECs would be exclusion areas for public utilities.

Land Ownership. Under all alternatives, as part of the recovery plan for the two listed plant species, a high priority would be placed on acquiring surface and subsurface ownership of known habitats on private and state lands. BLM would also pursue, through exchange,

ownership of known private land habitat candidate T/E plants.

Coordination. Under all alternatives, BLM would cooperate with the Colorado Natural Areas Program, the Colorado Natural Heritage Program, and the U.S. Fish and Wildlife Service to evaluate species status and distribution and to monitor effectiveness of protection and conservation measures for T/E and special status plant species.

Summary of Proposed T/E Management Actions. Table 2-28 summarizes management actions proposed for T/E plants.

Table 2-28. Proposed Management for Threatened and Endangered Plants

Alternative A	Alternative B	Alternative C	Alternative D
NSO stipulation placed on oil and gas leases proposed in *known* T/E habitat (1,440 acres).	NSO stipulation placed on all surface-disturbing activities proposed in both *known and potential* T/E habitat (46,840 acres).	Same as Alternative B	Same as Alternative B
Oil shale withdrawal (625,430 acres), which closes the entire withdrawal area to mineral entry, would remain in effect. *Known and potential* T/E plant habitat outside of withdrawal area would remain open to mineral entry.	Oil shale withdrawal would be revoked (see Withdrawal Section, this chapter). *Known and potential* T/E plant habitat inside existing oil shale withdrawal would be withdrawn and closed to mineral entry. It also would be withdrawn and closed outside revoked oil shale withdrawal.	Same as Alternative B except: *Known and potential* habitat inside of oil shale withdrawal would not be withdrawn and closed to mineral entry because oil shale withdrawal would remain in effect.	Same as Alternative C
Known T/E plant habitat would be closed to mineral materials. *Potential* T/E plant habitat would be open.	*Known and potential* T/E habitat would be closed to mineral materials.	Same as Alternative B	Same as Alternative B
Existing roads public utilities in *known and potential* T/E plant habitat would not be relocated.	Existing roads and public utilities within *known and potential* T/E plant habitat (Map 2-11) would be relocated. All *known and potential* T/E plant locations would be exclusion areas for public utilities.	Same as Alternative B	Same as Alternative B
Motorized vehicles allowed only on existing roads and trails inside three existing ACECs designated for T/E plants. Motorized vehicles would not be restricted within *known and potential* T/E plant habitat outside of three ACECs.	Same as Alternative A except: motorized vehicles would not be allowed off existing roads and trails outside of ACECs.	Motorized vehicles allowed only on designated roads and trails throughout the resource area, including ACECs and T/E plant habitat. Motorized vehicles prohibited from driving off roads and trails.	Same as Alternative C
Three ACECs designated for T/E plants would remain as ACECs: Dudley Bluffs, Yanks Gulch/Upper Greasewood Creek, and Raven Ridge (6,430 acres on BLM and split estate lands)	Same as Alternative A	Same as Alternative A except: three additional ACECs would be designated for T/E plants: Ryan Gulch, Raven Ridge Addition, and Duck Creek (8,230 acres on BLM and split estate lands)	Same as Alternative C

Implementation

Under Alternatives A, the BLM Colorado State Office would place the NSO stipulation described above on *oil and gas leases* issued in *known* T/E plant habitat (Map 2-11). An environmental assessment would be completed prior to issuing applications for permit to drill in these areas.

Under Alternatives B, C, and D, the BLM Colorado State Office would place the NSO stipulation on oil and gas leases issued in both *known and potential* T/E habitat. The BLM White River Resource Area would attach the NSO stipulation to all other *surface-disturbing land use authorizations issued in known and potential* T/E habitat. New plant habitat would be identified by conducting on-the-ground plant surveys in previously unsurveyed areas prior to approving authorizations. Any newly-identified habitat would be added to Map 2-11.

Under Alternative B, BLM would petition the Secretary of the Interior to withdraw *known and potential* plant habitat within and outside the revoked oil shale withdrawal (see Withdrawal section, this chapter).

BLM would petition the Secretary of the Interior to withdraw *known and potential* habitat outside the western boundary of the oil shale withdrawal and within the Raven Ridge designated and proposed ACECs under Alternatives C and D.

SENSITIVE PLANTS AND REMNANT VEGETATION ASSOCIATIONS MANAGEMENT

Management

No Surface Occupancy Stipulation. Under Alternative A, an NSO stipulation would be placed on *oil and gas* leases in known habitat of BLM sensitive plants and remnant vegetation associations (RVAs) (approximately 4,520 acres). The NSO stipulation would not be placed on other *surface-disturbing activities*.

Under Alternatives B, C, and D, an NSO stipulation would be placed on all *surface-disturbing* activities in habitat of BLM sensitive plants and RVAs (Map 2-11). New plant locations, mapped as a result of future surveys, would also be protected by an NSO stipulation. The area manager could except the NSO stipulation if a suitable location could be found through an on-the-ground survey and if a finding of no impact could be made through preparation of an environmental assessment and consultation with U.S. Fish and Wildlife Service. A finding of possible impact to the listed species would require formal consultation with the U.S. Fish and Wildlife Service.

Locatable Minerals Closures. Under Alternatives A, C, and D BLM sensitive plants and RVAs would locations would be closed to mineral entry only in the existing oil shale withdrawal. Locations outside the existing oil shale withdrawal would not be closed to mineral entry. Under Alternative B, no BLM sensitive plant and RVA locations would be closed to mineral entry.

Mineral Materials. Under Alternative A, NSO areas of BLM sensitive plants and RVAs would not be closed to mineral materials. Under Alternatives B, C, and D, NSO areas of BLM sensitive plants and RVAs would be closed to mineral materials.

Roads and Public Utilities. Under Alternative A, existing roads and public utilities (pipelines, power lines, and communication facilities) in NSO areas of BLM sensitive plants and RVAs would not be relocated. Under Alternatives B, C, and D, existing roads and public utilities in NSO areas would be relocated.

Motorized Vehicle Travel. Under Alternative A, motorized vehicle travel within mapped NSO areas and ACECs would be allowed only on existing roads and trails. No travel restrictions would apply outside of NSO areas and ACECs. Under Alternatives B, C, and D, motorized vehicle travel would be allowed only on designated roads and trails throughout the resource area. Roads not designated for use within the sensitive plant and RVA locations would be abandoned and reclaimed.

ACEC for BLM Sensitive Plants and RVAs. Under all alternatives, six areas (totaling 8,740 acres occupied by BLM sensitive plants and RVAs would continue to be designated as areas of critical environmental concern (ACECs) and Colorado natural areas. Under Alternative B, three additional areas (totaling 8,430 acres occupied by sensitive plants and RVAs would be designated as ACECs. Under Alternatives C and D, seven additional areas (totaling 39,390 acres) would be designated as ACECs for protection of sensitive plants and RVAs.

Land Ownership. Under Alternatives C and D, surface and subsurface ownership of known locations of high priority sensitive plant species and RVAs on private or state-owned lands adjoining ACECs would be pursued through exchange. Known locations of high priority sensitive plant species and RVAs within ACECs would not be available for disposal.

Coordination. Under all alternatives, the BLM would cooperate with Colorado Natural Areas Program to monitor the effectiveness of conservation and protection measures for BLM and Colorado sensitive plants and high priority RVAs.

Summary of Proposed Management for BLM Sensitive Plants and RVAs. Table 2-29 shows, by alternative, a summary of management actions proposed for BLM sensitive plants and RVAs. section, this chapter).

Table 2-29. Proposed Management for BLM Sensitive Plants and RVAs

Alternative A	Alternative B	Alternative C	Alternative D
NSO stipulation placed on *oil and gas leases* proposed in BLM sensitive plant and RVA locations.	NSO stipulation placed on *all surface-disturbing activities* proposed in BLM sensitive and RVA locations.	Same as Alternative B	Same as Alternative B
Oil shale withdrawal (43,550 acres), which closes the entire withdrawal area to mineral entry, would remain in effect. BLM sensitive plant and RVA locations *outside* of withdrawal area would remain open to mineral entry.	Oil shale withdrawal would be revoked (see Withdrawal Section, this chapter). BLM sensitive and RVA plant locations would not be closed to mineral entry.	Same as Alternative A	Same as Alternative A
BLM sensitive plant and RVA locations would be open to mineral materials.	NSO areas of BLM sensitive plants and RVAs would be closed to mineral materials.	Same as Alternative B	Same as Alternative B
Existing roads and public utilities BLM sensitive plant and RVA locations would not be relocated.	Existing roads and public utilities within BLM sensitive plant and RVA locations would be relocated where feasible. All NSO locations for BLM sensitive plants and RVAs would be avoidance areas for public utilities.	Same as Alternative B	Same as Alternative B
Motorized vehicles allowed only on existing roads and trails inside three existing ACECs designated for T/E plants. Motorized vehicles would not be restricted within known and potential T/E plant habitat outside of three ACECs.	Same as Alternative A except: motorized vehicles would not be allowed off existing roads and trails outside of ACECs.	Motorized vehicles allowed only on designated roads and trails throughout the resource area, including ACECs and T/E plant habitat. Motorized vehicles prohibited from driving off roads and trails.	Same as Alternative C

Table 2-29 continued

Alternative A	Alternative B	Alternative C	Alternative D
Six ACECs designated for BLM sensitive plants, RVAs, and T/E plants would remain as ACECs: Deer Gulch, Lower Greasewood Creek, South Cathedral Bluffs, Dudley Bluffs, Yanks Gulch/Upper Greasewood Creek, and Raven Ridge (8,740 acres)	Same as Alternative A except the following three ACECs would be designated for BLM sensitive plants, T/E plants, and RVAs: Soldier Creek, South Cathedral Addition, and North Cathedral (9,400 acres)	Same as Alternative A except the following seven ACECs would be designated for BLM sensitive plants, T/E plants, and RVAs: Soldier Creek, South Cathedral Addition, Raven Ridge Addition, White River Riparian, Coal Oil Rim, Moosehead Mountain, and Oil Spring Mountain (48,130 acres)	Same as Alternative C

Implementation

Under all alternatives, the BLM Colorado State Office would attach an NSO stipulation to *oil and gas leases* issued in sensitive plant and RVA locations.

Under Alternatives B, C, and D, the BLM White River Resource Area would attach an NSO stipulation to all *surface-disturbing* land use authorizations issued in BLM sensitive and RVA locations. The NSO stipulation would not be attached to surface-disturbing land use authorizations other than oil and gas leases under Alternative A.

The NSO stipulation would be attached to the land use authorization (see Appendix B) to the extent such protection would not unduly hinder or preclude the exercise of valid existing rights. If the NSO stipulation would hinder or preclude the exercise of valid existing rights, protection would be applied through conditions of approval (see Appendix B) which would require reclamation of disturbed areas with native species occurring within an RVA or by reproducing sensitive species on their disturbed habitat.

Under all alternatives, newly-identified plant habitat would be added to existing maps. New plant habitat would be identified by conducting on-the-ground plant surveys in previously unsurveyed areas prior to approving the authorizations for surface-disturbing activities.

TIMBERLANDS MANAGEMENT

Management

Douglas-fir and Spruce/fir

Commercial Harvest Program. Under Alternative A, 19,190 acres of Douglas-fir and spruce/fir timberlands would be available for harvest. This acreage includes all timberlands within the resource area without application of commercial vs. noncommercial criteria or harvest suitability criteria. Based on 100 year rotation the currently proposed harvest level is 190 acres/year.

Under Alternatives B, C, and D five timber management areas (TMAs) would be the focus of the timber harvest program. These five TMAs were designated because they contain the majority of harvestable timber based on quality, quantity, and harvest suitability. Table 2-30 is a summary of the management categories used to determine the allowable harvest for each alternative. Table 2-31 included at the end of this section shows the FMAs and the available timber in each.

Table 2-30. Summary of Douglas-Fir and Spruce/Fir Classification for all FMAs

Timber Management Area (TMA)	Intensive	Restricted	Enhancement of Other Resources	Not Available
All TMAs	0 acres	400 acres	1,050 acres	0 acres

Under Alternative B, 1,450 acres (Restricted and Enhancement Categories) timberland would be available for harvest and considered within the allowable harvest. Based on a 100 year rotation 14.5 acres/year would be available for harvest. Over a ten year period, no more than 145 acres of timber could be harvested.

Under Alternatives C and D, 400 acres (Restricted Category) of timberland would be available for harvest and considered within the allowable harvest calculation. Based on a 100 year rotation, 4 acres/year would be available for harvest. Under this alternative, a commercial timber harvest program would not be pursued. These lands would be managed for enhancement of other resources and maintenance of stand structure. In the case of disease or insect outbreak, the need for treatment and types of treatments would be determined.Under Alternatives B, C and D, all commercial and noncommercial timberlands would be available for management described under Plant Communities Management.

Under Alternatives A and B, personal-use permits for harvest of dead and down Douglas-fir would be issued without limit. Under Alternatives C and D, a 10-cord limit of dead and down would be established.

Under Alternatives A and B there would be no limits on the harvest of Douglas-fir, spruce, and subalpine fir, Christmas trees and transplants. Under Alternatives C and D, permits would not be issued for the harvest of the above species for Christmas trees and transplants.

Table 2-31. TMA Classification (Commercial Douglas-Fir and Spruce/Fir)

Timber Management Areas	Intensive[1/]	Restricted[2/]	Enhancement of Other Resources[3/]	Not Available[4/]	Total
Cathedral Bluffs	0	70	0	0	70
Cow Creek	0	250	220	0	470
Fourteen Mile*	0	0	470	0	470
Thirteen Mile*	0	0	360	0	360
Douglas/Baxter	0	80	0	0	80
Total	0	400	1,050	0	1,450

*Patenting of oil shale claims would reduce these timber management areas by half.

[1/] Areas where timber harvest is the primary use and where other resource values occur but are not emphasized.

[2/] Areas where multiple use and/or other values occur but are not emphasized.

[3/] Areas where forest management activities are specifically for the benefit of other identified resource uses or values.

[4/] Areas where no forest management is planned.

Noncommercial Timberlands. Under Alternatives B, C, and D, noncommercial timberlands would not be included within the allowable harvest. Any treatments on these areas would be for the benefit of other resources, subject to site specific environmental analysis. Table 2-32 lists the management categories for the noncommercial timberlands.

Table 2-32. TMA Classification (Noncommercial Douglas-fir and Spruce/Fir)

Timber Management Areas	Intensive[1/]	Restricted[2/]	Enhancement of Other Resources[3/]	Not Available[4/]	Total
Cathedral Bluffs	0	0	500	0	500
Cow Creek	0	0	600	0	600
Fourteen Mile*	0	0	460	0	460
Thirteen Mile*	0	0	180	0	180
Douglas/Baxter	0	0	1,920	0	1,920
Total	0	0	3,660	0	3,660

*Patenting of oil shale claims would reduce these timber management areas by half.
[1/]Areas where timber harvest is the primary use and where other resource values occur but are not emphasized.
[2/]Areas where multiple use and/or other values occur but are not emphasized.
[3/]Areas where forest management activities are specifically for the benefit of other identified resource uses or values.
[4/]Areas where no forest management is planned.

Availability of Aspen for Harvest and Management. Under Alternatives A and B personal use permits for the harvest of aspen firewood would be issued without limit. Under Alternatives C and D harvest of aspen firewood would be limited to 10 cords per year of dead and down material only.

Under Alternative A, commercial aspen harvest limits were not determined. There would not be any commercial harvest of aspen firewood. No limits would be placed on the harvest of aspen transplants.

Under Alternative B, 520 acres in Wilson Creek and 150 acres in the Piceance Basin (Puddin Ridge) would be included in a commercial harvest program and available for sale. Based on a 70-year rotation, 10 acres/year would be harvested per year, or 100 acres per decade. Stands would be harvested by clearcut followed by prescribed burning and fencing. No limits would be placed on the harvest of aspen transplants.

Under Alternatives C and D, aspen stands would be inventoried for condition and production capability. Aspen stands would be managed to maintain productivity, extent, and forest structure, and for the enhancement of other resources. No allowable harvest limit would be established. Management prescriptions to maintain and enhance these forests would include clearcutting, prescribed burning, and fencing. Personal-use permits would be issued, but they would be limited to 10 cords per year of dead and down material only. These permits would be limited to the Danforth Hills/Jensen areas. A harvest limit or 50 saplings and 200 seedlings per year would be established.

Under Alternatives A and B, no recommendations would be made for establishment of ACECs. Under Alternatives C and D, Coal Oil Rim and Moosehead Mountain would be designated as ACECs to protect timberlands and woodlands (see ACEC Section, this chapter).

Implementation

Under Alternatives A and B, commercial sales of timber and aspen would be advertised, administered, and monitored to ensure decadal compliance. Under Alternatives C and D, the cutting of commercial timber and aspen would be for the maintenance and enhancement of forest structure and associated other resource values such as wildlife and watersheds. There would be no commercial sale of timber.

WOODLANDS MANAGEMENT

Management

Commercial Woodlands - Pinyon/Juniper. Under Alternative A, a total of 177,150 acres of commercial (suitable and unsuitable) and noncommercial woodlands stands would be available for commercial harvest. Using a 200-year rotation, the annual allowable harvest would be would be 30 acres in the Piceance Basin (a decision in the *Piceance Basin RMP*) and 860 acres in the remainder of the resource area. The primary method of harvest would be clearcutting.

Under Alternatives B, a total of 146,760 acres of commercial woodlands within suitable and unsuitable woodland stands would be available for commercial harvest. These woodlands are located in two woodland management areas (WMAs) (Piceance and Douglas/Cathedral WMAs). The WMAs contain the majority of the quality pinyon/juniper stands in the resource area. The acreage available for harvest includes woodlands in the "Intensive Management," "Restricted Management," and "Enhancement of Other Resources" management categories shown in Table 3-34. Using a 300-year rotation for clearcutting, the annual allowable harvest would be 240 acres. Using a 100-year rotation for selective cutting, the annual allowable harvest would be 730 acres. The allowable harvest would be monitored as a decadal limit which would allow for yearly fluctuations.

Under Alternatives C and D, a total of 27,600 acres of commercial woodlands within suitable woodland stands would be available for commercial harvest. These woodlands also would be within the two WMAs. The acreage available for harvest includes only the woodlands in the "Intensive" management category (Table 2-33). Using a 300-year rotation for clearcutting, the annual allowable harvest would be 45 acres. Using a 100-year rotation age for selective cutting, the annual allowable harvest would be 136 acres. The allowable harvest would be monitored as a decadal limit, which would allow for yearly fluctuations. Table 2-34 compares, by alternative, the annual allowable harvest.

Table 2-33. Management Categories within Woodland Management Areas (Alternatives B, C, D)

Woodland Management Area (WMA)	Management Categories				
	Intensive Management[1/]	Restricted Management[2/]	Enhancement of other Resources[3/]	Not Available	Total WMA
Douglas/Cathedral	12,260	20,430	40,890	4,090	77,670
Piceance GRA	15,340	19,940	37,900	8,820	82,000
Total	27,600	40,370	78,790	12,910	159,670

[1/] Areas where forest harvest is the primary use and where other resource uses or values occur but are not emphasized.
[2/] Areas where multiple use and/or other resource values occur but are not emphasized.
[3/] Areas where forest management activities are specifically for the benefit of other identified resource uses or values.

Table 2-34. Commercial Woodland Harvest Levels and Allowable Cut

Acreage/Allowable Cut	Alt A	Alt B	Alt C	Alt D
Extent of commercial pinyon/juniper woodland harvest program (acres)	177,150	159,670	159,670	159,670
Available for commercial harvest (acres)	177,150	146,730	27,600	27,600
Rotation age (years)	100	300/100	300/100	300/100

Table 2-34 continued

Acreage/Allowable Cut	Alt A	Alt B	Alt C	Alt D
Annual allowable clearcut (acres)				
- Resource area-wide	860	N/A	N/A	N/A
- Piceance GRA	30	120	25	25
- Douglas/Cathedral GRA	N/A	120	20	20
Annual allowable selective cut (acres)				
- Resource area-wide	N/A	N/A	N/A	N/A
- Piceance GRA	N/A	370	75	75
- Douglas/Cathedral GRA	N/A	360	61	61

Under Alternative A, removal of woodlands as a result of commercial development, range improvements (livestock and wildlife), and wildfire would not be counted as part of the annual allowable harvest. Under Alternatives B, C, and D, such removal would be counted as part of the annual allowable harvest. Under all alternatives, woodlands removed as a result of commercial development (oil shale, oil and gas, sodium) would be purchased prior to removal. Table 2-19, Plant Communities Management Section, this chapter, shows the acreage per year projected to be removed by commercial development and improvements.

Noncommercial Woodlands - Pinyon and Juniper. Under all alternatives, a total of 493,190 acres of pinyon/juniper classified as noncommercial woodlands would be available for personal and commercial use through free use and commercial permits. These noncommercial woodlands occur throughout the resource area. Noncommercial pinyon/junipers would be available for firewood and Christmas tree harvest, for transplanting, and for manipulation to enhance other resource values. Noncommercial woodlands would not be included in the annual allowable harvest and would not be managed for commercial firewood production. Noncommercial woodland harvest would be made available to the public prior to undertaking other removal techniques. Table 2-35 shows the management categories for noncommercial woodlands within the resource area.

Table 2-35. Noncommercial Pinyon/Juniper Woodlands (Alternatives B, C, D)

Woodland Management Area (WMA)	Management Categories				
	Intensive Management[1/]	Restricted Management[2/]	Enhancement of other Resources[3/]	Not Available	Total in WMA
Piceance GRA	0	131,440	15,280	12,910	159,680
Douglas/Cathedral GRA	0	178,320	71,070	22,280	217,670
Blue Mountain/ Moosehead, Wolf Creek/Red Wash, Crooked Wash/Deep Channel, Danforth Hills/Jensen GRAs	0	9,200	47,370	5,270	61,840
Total	0	318,960	133,720	40,510	493,190

[1/] Areas where forest harvest is the primary use and where other resource uses or values occur but are not emphasized.
[2/] Areas where multiple use and/or other resource values occur but are not emphasized.
[3/] Areas where forest management activities are specifically for the benefit of other identified resource uses or values.

Under all alternatives, permits would not be issued in WSAs, ACECs, special management areas, riparian areas, or areas of cultural/historical sensitivity. Under Alternatives C and D, permits for harvest of pinyon/juniper woodland products (posts, poles, Christmas trees, firewood, etc.) would not be issued in the Blue Mountain GRA.

Christmas Trees and Transplants. Under all alternatives, personal and commercial permits for Christmas trees and transplants would be issued without limit. Permits would be subject to appropriate provisions and specifications listed in BLM Manual Handbook 5420-1 and to stipulations in Appendix B. Under Alternatives A and B, restrictions would be placed on personal and commercial permits for Christmas trees.

Posts and Poles. Under Alternatives A and B, permits for posts and poles would be issued without limit. Under Alternatives C and D, the following annual limits would be placed on posts and poles:

Douglas/Cathedral	1,500 posts/poles
Piceance	1,500 posts/poles
Crooked Wash/Deep Channel	500 posts/poles

Under all alternatives, permits for posts and poles would not be issued within ACECs, areas of cultural/historical sensitivity, WSAs, and riparian areas.

Firewood. Under Alternatives A and B, firewood permits would be issued resource area wide. They would not be limited to specific (marked) removal areas. Under Alternatives C and D, firewood permits would be issued only in the Piceance Basin.

Under all alternatives, firewood permits in woodland management areas (WMAs) would be limited to dead and down material only.

Noncommercial Woodlands - Oakbrush. Commercial permits for harvest of oak firewood would not be issued. For personal use permits, harvest limits would not be established under Alternative A, a 50-cord limit would be established under Alternative B, and a 20-cord limit would be established under Alternatives C and D.

Other Vegetative Products. Under all alternatives, minor demand exists for the harvest of brush transplants, primarily rabbitbrush, serviceberry, and chokecherry. Permits for collection of these species would be issued without limit, subject to appropriate provisions and specifications listed in BLM Manual 5420-1 and Appendix B stipulations.

Commercial vs. Noncommercial Woodlands

Commercial woodlands are woodland sites that are or are capable of producing 7,000 cords of pinyon/juniper per year (a mix of greater than 50 percent pinyon is preferred). Noncommercial woodlands are those that produce less than 7,000 cords per year of pinyon and juniper. Both commercial and noncommercial woodlands have sites that are suitable for management and harvest.

Suitable vs. Unsuitable Woodlands

Suitable woodlands are those that have favorable slopes, accessibility, soils, and other features that make them reasonable to harvest. Unsuitable woodlands are those that are not reasonable to harvest.

Implementation

Under all alternatives, harvest of woodland products would be controlled and managed by issuance of contracts and permits. Harvest of commercial woodlands would be monitored to ensure compliance with the decadal harvest limits. Inventories for the occurrence of insect and disease infestation would be conducted by U.S. Forest Service and BLM.

LIVESTOCK GRAZING MANAGEMENT

Livestock grazing would be managed as described in the 1981 *Rangeland Program Summary* (RPS) (BLM 1981), which is the record of decision for the 1981 *White River Grazing Management Final Environmental Impact Statement* (Grazing EIS), and the RPS updates issued in 1981 and 1984. These documents address five major actions: (1) allocation of forage among predominant grazing animals and other uses, (2) initiation of intensive grazing management, (3) continuation of exiting intensive grazing management practices, (4) minimum period of rest for each allotment, and (5) range improvements to enhance rangeland productivity and management. These

documents and management actions are incorporated and summarized in this document.

Management

Forage Allocation. Under all alternatives, 50 percent of the annual above-ground forage production would be reserved for maintenance of the plant's life cycle requirements, watershed protection, visual resource enhancement, and food and cover requirements of small game and nongame wildlife species. The remaining 50 percent of the forage base would be allocated among predominant grazing users.

Under all alternatives, forage allocations made in the 1981 *Rangeland Program Summary* for livestock would remain the same as allocated. A total of 126,490 AUMs would be allocated to livestock in the short term, and a total of 146,060 AUMs would be allocated to livestock over the long-term through vegetation manipulations that increase sustainable rangeland production.

Stocking Levels. Adjustments in livestock levels were made after issuing the RPS in April 1981. Most adjustments were completed by the end of 1986. Additional adjustments were made between 1987 to the present based upon results of additional monitoring studies and losses of BLM land acreage. Livestock grazing use levels have been reduced from 160,310 AUMs authorized in 1980 to the present level of 126,490 AUMs. Under all alternatives, the current allocation of 126,490 AUMs would remain the same for the short term.

Use Adjustments. Under all alternatives, monitoring studies would continue to be undertaken on 81 grazing allotments to evaluate the effects of activity plan development and to further refine livestock grazing levels, if needed. Additional adjustments in livestock grazing levels as a result of increases or decreases in forage would follow procedures outlined in *43 CFR 4110*. Under Alternative A, increases in available forage would be apportioned among competing uses -- first, to fill the suspended livestock grazing preferences for the allotment with increased available forage; second, to fill big game wildlife forage needs; and third, to increase wild horse forage allocations.

Under Alternatives B, C, and D, increases in available forage would be apportioned in proportion to the allocation levels developed in integrated activity plans.

Allotment Categorization. The 144 White River Resource Area grazing allotments have been placed in one of three management categories that define intensity of management: (1) improve, (2) custodial, and (3) maintain. The intent of categorization is to concentrate funding and on-the-ground management efforts on those allotments where grazing management is most needed to improve the resources or resolve serious resource conflicts. Chapter 3, Livestock Grazing Section, explains each of these categories and lists criteria used in the categorization process. Table 2-36 lists total allotments in each category. Table D-1, Appendix D, lists individual allotments in each category. Allotment categories are shown on Map 2-12.

Table 2-36. Allotment Categories

Category	Number of Allotments	Acres of BLM Land	Authorized AUMs
Improve	54	1,236,490	105,120
Custodial	54	67,800	7,790
Maintain	36	130,340	13,580
Total:	144	1,434,630	126,490

The 54 allotments placed in the *improve* category were identified for development of allotment management plans (AMPs). The AMPs direct livestock management through decisions about grazing systems, season-of-use, number and kind of livestock, range developments or vegetative treatments required to meet resource objectives designed to improve and maintain healthy rangelands and to resolve conflicts with other public land uses.

To date, AMPs have been developed for 19 *improve* category allotments involving 664,680 acres of BLM land with an authorized livestock grazing use level of 58,650 AUMs (Appendix D, Table D-1). Under all alternatives, AMPs for the remaining 35 allotments in the *improve* category would be developed as time and funding permit. Current livestock grazing levels and management practices would continue to be authorized on the 36 *maintain* and 54 *custodial* category allotments. Rangeland improvements and livestock management facilities needed on maintain and custodial category allotments would be limited to permittee requested and funded improvements and those needed to meet resource objectives other than livestock management. Public funding for rangeland improvements would be limited to riparian and wildlife habitat improvements on these allotments.

Allotments could be moved from one category to another as new information becomes available, resource conditions change, or management activities are implemented based on category criteria listed in Chapter 3. Development of integrated activity plans would include all allotments within the activity plan boundaries regardless of current management category.

Minimum Rest Requirements. A minimum rest requirement (period of no livestock grazing) would be developed for each allotment (Appendix D, Table D-1) as integrated activity plans are developed. This period of rest is the minimum required to restore plant vigor, improve watershed conditions, and improve rangeland conditions. Minimum rest periods would be incorporated into grazing systems during activity plan preparation.

A majority of the BLM land is used by livestock during the spring and early summer growing periods. Grazing use normally occurs late enough in the growing season (elevations below 7,000 feet) that forage plants do not regrow prior to their dormancy in early summer. Without regrowth prior to dormancy, the forage plants do not mature to set seed and replenish food reserves. The minimum rest periods have been developed and proposed for the spring and early summer growing periods so as to provide a period of nonuse for the forage plants so that they can fulfill their basic physiological requirements for maintenance of growth, vigor, and adequate reproduction. In addition, the rest period would reduce livestock trampling damage to plants and soil during wet soil conditions after spring thaw. The frequency of the proposed rest periods was based on the present rangeland conditions of each allotment with more frequent spring rests proposed for poor conditions rangeland than for fair or good condition.

This rest can be provided in an alternate year sequence or on a yearly basis. Minimum rest for a range area may be satisfied in two ways: (1) the entire area would not be grazed by livestock, or (2) the area may be subdivided to permit livestock use on one or more subunits while the remaining unit or units are left unused.

Range Improvements. Range improvements would be necessary to control livestock use and improve rangelands conditions. Anticipated improvement needs would include approximately 200 miles of fencing and about 700 water developments including reservoirs, wells, springs with associated troughs, tanks and pipelines. The number of acres of pinyon-juniper, sagebrush/mountain browse, and greasewood that would be manipulated to improve rangelands conditions is shown in Table 2-37. The number of acres manipulated would be the same under each alternative.

Table 2-37. Rangeland Vegetation Manipulations

Type of Manipulation	Pinyon/Juniper (Acres)	Sagebrush/Mountain Browse (Acres)	Greasewood (Acres)	Total
Mechanical and burning	24,260	N/A	N/A	24,260
Chemical	N/A	19,750	3,510	23,270
Mechanical	N/A	6,230	N/A	6,230
Prescribed burning	N/A	76,760	N/A	76,760
Total '	24,260	102,740	3,510	130,520

Livestock Trailing Use. Livestock trailing use would be authorized to and from BLM grazing allotments along established trails on 9,600 acres of BLM land. Established trails include the White River Trail, Victory Trail, Dragon Trail, Yellow Jacket Trail, Ute Trail, and Staley Mine Trail, all collectively known as the White River Trail Allotment 6699.

State Wildlife Areas. Under Alternative A, all forage production on BLM rangelands fenced into the Oak Ridge and Jensen State Wildlife Areas and the Little Hills Experiment Station would not be grazed by livestock. It would be reserved for the exclusive use of wildlife. Under Alternatives B, C, and D, livestock grazing permits/leases would be issued on BLM rangeland fenced within these areas under the following conditions.

- Livestock permittee has authorization to graze livestock on adjoining state lands.
- Livestock grazing use would enhance or maintain wildlife habitat values and objectives developed for the three areas.
- Livestock grazing would be suspended or eliminated if livestock use has either achieved wildlife habitat objectives or are detracting from habitat objectives developed for the three areas.

Implementation

Activity plans prescribing grazing management activities would be written and implemented for all allotments in the *improve* category. These plans would include necessary NEPA analysis. Changes in management categories would be supported by a documented analysis showing the basis for the change. Minimum rest periods would be incorporated into grazing systems during activity plan development.

A supervision and monitoring plan would be developed to ensure allotments within each category (maintain, improve, and custodial) would be checked periodically to determine resource conditions and whether criteria are still being met.

WILD HORSE MANAGEMENT

Management

Alternative A. A total of 2,100 AUMs of forage would be provided to support 60-140 wild horses. The Piceance-East Douglas Herd Management Area (HMA), containing 161,300 acres (see Table 2-38 and Map 2-13 at the end of the chapter), would be managed to provide 900 to 2,100 AUMs of forage.

Wild horses would be removed from the North Piceance (107,590 acres) and the West Douglas (190,870 acres) Herd Areas (HAs). The HMA would be open to motorized vehicles with no restrictions.

Alternative B. A total of 1,050 AUMs would be provided to support 60-70 wild horses. The Piceance-East Douglas HMA would be adjusted to exclude the upper part of the Boxelder Allotment (6,080 acres) and Pasture C of the Square S Allotment (12,460 acres), which were patented in 1987. The adjusted Piceance-East Douglas HMA, totaling 146,200 acres, would be managed to provide 900 to 1,050 AUMs of forage for 60 to 70 horses.

Wild horses would be removed from the excluded portion of the Boxelder Allotment and Pasture C of the Square S Allotment in the Piceance-East Douglas HMA. Horses also would also be removed from the North Piceance HA and the West Douglas HA. Motorized vehicles would be allowed only on existing roads and trails.

Alternative C. A total of 4,800 AUMs would be provided to support 320 wild horses. The Piceance-East Douglas HMA would be managed to provide 2,100 AUMs of forage for 90-140 horses. The North Piceance HA would be designated as the North Piceance HMA. The North Piceance HMA would be managed to provide 600-900 AUMs of forage for 40-60 wild horses.

A portion of the West Douglas HA (Map 2-13) would be designated as the Texas Creek HMA; 1,050 AUMs of forage would be allocated for 60-70 wild horses. Texas Creek HMA and the remainder of the existing West Douglas HA would also serve as a permanent relocation area for older, predominantly male, unadoptable horses which are gathered from within the White River Resource Area.

The Texas Creek HMA (41,370 acres) and the remainder of the West Douglas HA (149,500 acres) would also support a population of younger age-class animals. These horses might be used for introduction into the North Piceance and Piceance-East Douglas HMA for increased genetic diversity in those herds. The remainder of the West Douglas HA (149,500 acres) would be allocated 750 AUMs of forage to support a population of 0 to 50 horses. Motorized vehicles would be allowed only on existing roads and trails.

Alternative D. A total of 2,100 AUMs would be provided to support 95-140 horses. The boundary of the Piceance-East Douglas HMA would be expanded to include the Greasewood Allotment (28,830 acres) portion of the North Piceance HA. The expanded Piceance-East Douglas HMA, totaling 190,130 acres, would be managed to provide 1,430 to 2,100 AUMs of forage for 95-140 horses.

The remainder of the North Piceance HA (78,760 acres) and the West Douglas HA (190,870 acres) would be managed in the short term (0-10 years) to provide 750 AUMs of forage for population of 0 to 50 horses in each area (a total of 1,500 AUMs). The long-term objective would be to remove all wild horses in both areas. A cooperative management agreement for the Boxelder Allotment and Square S Pasture C would be pursued with Shell Minerals, holder of 13,900 acres. Motorized vehicles would be allowed only on designated roads and trails (see Travel Management Section, this chapter).

Implementation

Under all alternatives, the Piceance-East Douglas HMA Activity Plan/Environmental Assessment would be revised to be consistent with the RMP. Under Alternatives B, C, and D, use thresholds would be developed on key areas of range sites used by wild horses. Wild horse management decisions would be based on monitoring of these areas. Under Alternative C, HMA plans and environmental assessments would be written for the proposed North Piceance and Texas Creek HMAs.

Table 2-38. Allocation of Wild Horse AUMs

HMA/HA	Alternative A			Alternative B			Alternative C			Alternative D		
	Acres	# Animals	AUMs	Acres	# Animals	AUMs	Acres	# Animals	AUMs	Acres	# Animals	AUMs
Existing Piceance East Douglas HMA	161,300	60-140	900-2,100	142,770[1/]	60-70	900-1,050	161,300	140	2,100	190,130[2/]	95-140	1,430-2,100
Existing North Piceance HA	107,590	0	0	107,590	0	0	N/A[3/]	N/A	N/A	78,760[4/]	50-0 (ST-LT)	750-0 (ST-LT)
Existing West Douglas HA	190,870	0	0	190,870	0	0	190,870[5/]	0	0	190,870	50-0 (ST-LT)	750-0 (ST-LT)
Proposed North Piceance HMA	N/A	N/A	N/A	N/A	N/A	N/A	107,590	40-60	600-900	N/A	N/A	N/A
Proposed West Douglas HMA	N/A	N/A	N/A	N/A	N/A	N/A	149,500	0-50	750	N/A	N/A	N/A
Proposed Texas Creek HMA	N/A	N/A	N/A	N/A	N/A	N/A	41,370	60-70	1,050	N/A	N/A	N/A
Maximum Total	--	60-140	2,100	--	60-70	1,050	--	320	4,800	--	95-140	2,100

[1/] Excludes the upper part of Boxelder Allotment (6,080 acres) and Pasture C of the Square S Allotment (12,460 acres), which were patented into private ownership in 1987.
[2/] Includes the Greasewood Allotment portion of the North Piceance Herd Area (28,830 acres).
[3/] Would become the North Piceance HMA under Alternative C.
[4/] Excludes the Greasewood Allotment.
[5/] Sixty-four thousand five hundred acres would be excluded from the West Douglas HA and designated as the West Texas HMA.
ST = short term management objectives (0-10 years). LT = long term management objectives (10-50 years)

BIG GAME HABITAT MANAGEMENT

Management

Forage Allocation. Under all alternatives, forage allocations for big game would remain the same as that allocated in the 1981 *Grazing Management Environmental Impact Statement* and subsequent Rangeland Program Summary (RPS) in locations where rangelands and grazable woodlands are in a healthy state and in locations where at risk rangelands and grazable woodlands are improving. Forage would be reallocated in those areas where at risk rangelands and grazable woodlands are in a downward trend (see Plant Communities Section, this chapter) or where riparian, rangelands, and grazable woodlands are not functioning. The grazing EIS allocated 71,600 AUMs to 53,680 big game. Monitoring would be conducted following publication of the approved RMP to determine which areas are healthy, at risk, and not functioning (see Plant Communities Section, this chapter).

Under Alternatives A and B, the goal for big game would be to provide sufficient forage to sustain existing big game populations (50,970 animals, 82,120 AUMs). Under Alternatives C and D, the goal would be to provide sufficient forage to meet Colorado Big Game population objectives of 46,120 animals (72,750 AUMs).

Additional forage that might be needed to support proposed increases in big game would be evaluated in integrated activity plans that would follow publication of the approved RMP. Additional forage could be provided by manipulating vegetation to produce a healthy and biodiverse ecosystem. Table 2-39 shows big game population goals by alternative.

The goal under all alternatives, calculated big game forage use exceeds prescribed big game forage allocations. The predominant goal in each alternative would be to develop a forage base sufficient to meet the nutritional demands of big game at various population levels compatible with authorized livestock use, other multiple use objectives, and sustained plant community health.

Because of dramatic changes in big game populations and distribution patterns since 1981, reevaluation of forage availability and allocation among predominant users is imperative, regardless of alternative. Where rangeland monitoring studies (i.e., forage use levels, community condition) indicates express need, recommendations for revising forage use allocations would be considered through individual activity plans for integrated activity plans. The production, quality or availability of preferred big game forages would be enhanced as necessary to accommodate prescribed big game population objectives. Forage deficits would be compensated through various habitat improvement and livestock management techniques.

Under Alternative A, forage would be provided in the short (64,520 AUMs) and long term (71,600 AUMs) as allocated in the 1981 Grazing EIS and RPS (see Plant Communities Section, Forage Allocation Subsection, this chapter). Short-term allocations would be sufficient to sustain CDOW's 1978 population goals. Long-term allocations would be sufficient to sustain CDOW'S 1981 big game population objectives. Long-term provisions would be contingent on full implementation of the 1981 Grazing EIS.

Under Alternative B, 82,120 AUMs would be required to support 1990 deer and elk populations and allow for modest increases in pronghorn populations. Allotment-specific forage allocations would be modified to resolve livestock grazing or plant community objective conflicts through forage enhancement measures listed in Table 2-39 or cooperative management plans.

Under alternatives C and D, 72,750 AUMs would be required to support CDOW's most current big game population objectives.

The forage allocation table in the Plant Communities Section, this chapter, compares 1981 RPS populations, by big game species, with population and forage needs under Alternatives B, C, and D. Plant Communities Section, Forage Allocation Subsection, this chapter, compares the 1981 *Rangeland Program Summary* allocations for all predominant grazing users (livestock, wild horses, and big game) with the additional forage requirements needed to support big game under Alternatives B, C, and D. It also shows additional forage requirements needed to support proposed increases in wild horse populations under Alternative C.

Wildlife Habitat Improvements. Under all alternatives, vegetative cover would be reserved or enhanced to provide security, thermal cover, and other specialized habitat features necessary to meet the physiological and behavioral requirements of resident big game. Tables 2-39 lists habitat enhancement opportunities. Land uses that discourage efficient habitat use or impose excessive physiological demands on animals during sensitive periods would be restricted. Table 2-40 lists big game land use restrictions by alternative.

Surface stipulations listed in Appendix B would be applied to all new surface-disturbing activities in big game habitats. Maps 2-3, 2-4, and 2-5, show locations of no surface occupancy (NSO), timing limitations (TL), and controlled surface use (CSU) stipulations, respectively. Mitigation measures would be applied as conditions of approval to existing land use authorizations involving surface-disturbing activities to protect big game. These stipulations would not violate valid existing rights.

Coal decisions made in the *Coal Amendment to the White River Resource Area Land Use Plan* (BLM 1981) and the *Piceance Basin Resource Management Plan* (BLM 1987) would be carried forward into this RMP (see Coal Management Section, this chapter) under all alternatives. The acreage identified as unsuitable for further coal leasing based on wildlife issues would be modified as expressions of interest in coal leasing are received. Modifications would be based on reapplication of coal unsuitability criteria and would be done in coordination with the Colorado Division of Wildlife.

Implementation

Under Alternatives A,B, and C, the Piceance Basin Habitat Management Plan would be revised and would outline site-specific actions needed to implement decisions in this RMP.

Under Alternatives D, integrated activity plans (see Integrated Activity Plan Section, Chapter 1) would be prepared to outline site-specific management needed to implement this RMP. The integrated activity plans would propose management for all resources present including wildlife. The Piceance Basin Habitat Management Plan would be revised in increments through the development of integrated activity plans.

Table 2-39. Big Game Forage and Cover Objectives

Alternative A	Alternative B	Alternative C	Alternative D
Woody forage conditions (i.e. plant form, recruitment, and canopy density) would be improved or maintained across Piceance Basin's deer winter ranges by the year 2000, primarily by modifying livestock mgmt practices via AMP revisions.	Habitat improvement projects, animal redistribution or reduction techniques, and modified livestock mgmt would be used to attain the following goals: -reduce dormant season use of Utah serviceberry and mountain mahogany current annual growth (CAG) to <70 percent on deer and elk winter ranges. -limit growing season use of key woody forage on deer and pronghorn severe winter ranges and winter concentration areas to ≤ 10 percent CAG. -reduce the proportion of heavily hedged key browse (Cole browse survey method) on deer severe winter range to ≤ 35 percent	Habitat improvement projects, animal redistribution or reduction techniques, and modified livestock mgmt would be used to attain the following goals: -reduce use of Utah serviceberry and mountain mahogany current annual growth (CAG) to <70 percent dormant season use and <10 percent growing season use on all deer and elk winter ranges. -eliminate growing season use of key woody forage on deer and pronghorn severe winter ranges and winter concentration areas. -reduce the proportion of heavily hedged key browse (Cole browse survey method) on deer severe winter range to ≤ 35 percent	Same as Alternative C

Table 2-39 continued

Alternative A	Alternative B	Alternative C	Alternative D
Deer and elk forage availability would be improved by manipulating mature overstory canopies at the following levels: -12,740 acres of aspen and Douglas-fir on summer ranges -29,790 acres of sagebrush and mountain browse on deer winter range -39,150 acres of pinyon-juniper woodlands on deer winter ranges.	-maintain cumulative use of other important woody forages (e.g. saltbush, sagebrush) on deer and elk winter ranges and all pronghorn ranges at rates consistent with sustained plant vigor. Forage enhancement measures would be used to help resolve livestock forage conflicts, reduce excessive use, enhance or augment forage availability or quality, or redistribute animal use. Projects would normally be implemented through approved activity plans and integrated consistent with other resource program objectives. Significant reductions in essential winter forage bases would be minimized by incorporating the following vegetation manipulation guidelines: -Limit cumulative treatment of suitable sagebrush forage types on deer winter ranges and pronghorn overall ranges to 50 percent within 1 mile radii, not to exceed 20 percent of total type within individual GRAs. -Avoid treatment of suitable sagebrush forage types on deer severe winter ranges and pronghorn winter ranges.	-maintain cumulative use of other important woody forages (e.g. saltbush, sagebrush) on deer and elk winter ranges and all pronghorn ranges at rates consistent with sustained plant vigor. Significant reductions in essential winter forage bases would be avoided by incorporating the following vegetation manipulation guidelines: -Limit cumulative treatment of suitable sagebrush forage types on deer winter ranges and pronghorn overall ranges to 20 percent within 0.5 mile radii, not to exceed 10 percent of total type within individual GRAs.	Same as Alternative B
N/A	Confine treatment, where possible, to suboptimal stands and excess cover types. Where unavoidably involved, limit cumulative reductions to 20 percent within 1 mile radii.	-Prohibit treatment of suitable sagebrush forage types on deer severe winter ranges and pronghorn winter ranges, unless determined advantageous in context of spring forage or the establishment of superior forms of woody forage. In these cases, emphasize treatment of suboptimal stands and excess cover types.	Same as Alternative B
Maintain habitats sufficient to support a minimum winter deer population of 24,900 on BLM Land in Piceance Basin. This figure is considered a critical threshold that, if violated, may constrain further mineral leasing and development.	Same as Alternative A	Same as Alternative A	Same as Alternative A
Prohibit disruptive surface occupation or adverse habitat modification within 1/8 mile of important wildlife watering sites via application of NSO.	Water sources would be installed on pronghorn overall range and deer and elk critical summer ranges as need or public demand dictates. Developments would normally be integrated with range improvement or riparian restoration efforts.	Seasonally persistent water sources would be provided on pronghorn overall range at intervals not to exceed 2 miles and all deer and elk summer ranges at intervals of 0.5 mile as need dictates. Developments would be integrated with range improvement or riparian restoration efforts.	Same as Alternative B

Table 2-39 continued

Alternative A	Alternative B	Alternative C	Alternative D
All vegetation manipulations would be subject to the following design guidelines to maintain or enhance favorable distribution of big game cover: -treatment areas would be irregular in shape. -no point within treatment should be >600 feet from suitable cover.	All vegetation manipulations would be subject to the following design guidelines to maintain or enhance favorable distribution of big game cover: -achieve approximate 60:40 forage to cover ratios on the basis of 1 mile radii across all deer and elk ranges, distributing cover such that ≥75 percent of treated acreage lies within 600 feet of suitable cover. -reserve or allow development of coniferous canopies ≥60 percent (or densest available) and >300' in width on ≥10 percent of deer severe winter range on the basis of 1 mile radii.	All vegetation manipulations would be subject to the following design guidelines to maintain or enhance favorable distribution of big game cover: -achieve approximate 60:40 forage to cover ratios on the basis of 0.5 mile radii across all deer and elk ranges and, where appropriate, distributing cover such that 600-1200 feet of effective security cover remains available within 600 feet of any point in the treatment area. -reserve or allow development of coniferous canopies ≥70 percent (or densest available) and >300 feet in width on ≥10 percent of all elk/deer winter ranges and on ≥20 percent of severe winter ranges on the basis of 0.5 mile radii. -retain minimum 300 feet untreated buffers interconnected with other forms of cover around specialized use areas and travel lanes.	Same as Alternative C except 60:40 forage-to-cover ratios and coniferous canopy structures would be achieved on 1.0-mile radii.
N/A	N/A	Impose CSU stipulation (see Appendix B) on all land use activities that involve aspen, serviceberry and chokecherry communities north of Highway 40 as a means of maintaining the distribution, condition, and functional capacity of high priority wildlife habitats, including elk and deer.	Same as Alternative C
N/A	N/A	Livestock redistribution techniques would be employed to defer concentrated use of aspen and other special use habitats of deer and elk until after August 15.	Same as Alternative C
Maintain 20,720 acres of aspen and Douglas-fir woodlands as elk escape cover in Piceance Basin and on the Roan Plateau. Activities involving site conversion would be subject to special stipulations or conditions of approval designed to minimize or prevent unacceptable losses.	Minimize occupancy and long-term type conversions of noncommercial aspen, Douglas-fir, and spruce-fir stands to the extent practical through design modifications applied as special stipulations and conditions of approval developed during the NEPA process.	Avoid to extent practicable long-term seral or type conversions of all aspen, Douglas-fir, spruce-fir, and deciduous shrub communities. Where unavoidable, special stipulations would be applied requiring reclamation measures necessary to maintain site potential and restore desired composition and seral stage of the former community.	Same as Alternative C
N/A	N/A	Limit seral manipulations of Douglas-fir, spruce-fir, and aspen to those specifically designed to achieve objectives pertaining to stand perpetuation, enhancement of interstand diversity, and riparian improvement.	Same as Alternative C

Table 2-40. Big Game Land Use Restrictions

Alternative A	Alternative B	Alternative C	Alternative D
Restrict land use activities that disrupt animal behavior or habitat utility during sensitive time frames (see Appendix B) on the following seasonal ranges: -severe winter range (all species) -deer/elk production areas -pronghorn production areas -deer/elk migration routes	Restrict land use activities that disrupt animal behavior or habitat utility during sensitive time frames (see Appendix B) only on those seasonal ranges categorized by CDOW as critical habitats: -severe winter range (deer/elk) -elk production areas -pronghorn production areas	Restrict land use activities that disrupt animal behavior or habitat utility during sensitive time frames (see Appendix B) on the following seasonal ranges: -severe winter range (all species) -elk production areas -pronghorn production areas -pronghorn winter range -winter concentration areas (all species) -deer and elk summer ranges (critical habitat only, when cumulative adverse influences exceed 10 percent of total summer range extent in individual GMUs).	Restrict land use activities that disrupt animal behavior or habitat utility during sensitive time frames (see Appendix B) on the following seasonal ranges: -severe winter range (all species) -elk production areas -pronghorn production areas -deer and elk summer ranges (critical habitat only, when cumulative adverse influences exceed 10 percent of total summer range extent in individual GMUs).
N/A	N/A	The Oak Ridge State Wildlife Area and current closure area on Moosehead Mountain would be designated as a ROW exclusion area and oil and gas no-lease area as a means of eliminating the effects of mineral development on locally significant big game habitats and populations.	An NSO stipulation would be applied to the Oak Ridge State Wildlife Area as a means of eliminating the effects of mineral development on locally significant big game habitats and populations.
N/A	The Moosehead Road Closure Area and BLM lands within the Oak Ridge State Wildlife Area would be closed to motorized vehicle travel.	Same as Alternative B	Same as Alternative B
N/A	Big game critical habitats would be designated as OHV limited. Seasonal road closures would be used to limit effective road densities during periods of occupation to an average 1.5 miles/square mile. Restrictions may be temporarily excepted to achieve special mgmt needs (e.g. increase harvest)	Road abandonments and seasonal closures during periods of animal occupation would be used to the extent practical to limit effective road densities to an average maximum 1.5 miles/square mile. on big game critical habitats and 3 miles/square mile. on remaining big game ranges. Permitted road construction would be subject to special stipulations requiring commensurate reduction or stabilization of road densities where applicable. Restrictions may be temporarily excepted to achieve special mgmt needs (e.g. increase harvest)	Road abandonments and seasonal closures during periods of animal occupation would be used to the extent practical to limit effective road densities to an average maximum 1.5 miles/square mile. on big game critical habitats and 3 miles/square mile. on remaining big game ranges. Restrictions may be temporarily excepted to achieve special mgmt needs (e.g. increase harvest).
Displacement and harassment of big game would be reduced in mineral development areas by abandoning redundant vehicular access or imposing seasonal road closures. Unrestricted access would be retained on alternate ridges or valleys at a minimum.	Special stipulations or conditions of approval (COAs) would be applied through the NEPA process to preclude or discourage continued vehicular traffic on linear rights-of-way within OHV limited or closed areas	Same as Alternative B	Same as Alternative B

RAPTOR HABITAT MANAGEMENT

(See Also Special Status Wildlife Habitat Management Section)

Management

Under all alternatives, land-use activities would be implemented as listed in Table 2-41 to protect and maintain suitable raptor habitat. Important raptor-use areas identified would be protected by applying the surface stipulations listed in Appendix B. Maps 2-3, 2-4, and 2-5, show locations of no surface occupancy (NSO), timing limitations (TL), and controlled surface use (CSU) stipulations, respectively. Stipulations other than those listed in Appendix B would be applied to land use authorizations involving surface-disturbing activities to protect newly identified and important raptor-use areas. These stipulations would not violate valid existing rights.

Under all alternatives, coal decisions made in the *Coal Amendment to the White River Resource Area Land Use Plan* (BLM 1981) and the *Piceance Basin Resource Management Plan* (BLM 1987) would be carried forward into this RMP (see Coal Section, this chapter). The acreage identified as unsuitable for further coal leasing based on wildlife issues would be modified as expressions of interest in coal leasing are received. Modifications would be based on reapplication of coal unsuitability criteria and would be done in coordination with the Colorado Division of Wildlife.

Under all alternatives, new construction or modification of above-ground electric transmission facilities, where appropriate, would incorporate the most current raptor protection guidelines, using methods of conductor separation rather than features that discourage perching (see Appendix A, Best Management Practices).

Implementation

Under Alternative C, a minimum of one full nesting sequence would be required for investigation of suitable raptor nest habitats prior to implementing a project. Under Alternative D, inventory would be required when direct and indirect cumulative impact of the proposal exceeds 100 acres.

Table 2-41. Raptor Management

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Maintain the suitability and functional capacity of raptor habitats, including prey base, nest sites, and other special habitat features, to stabilize or allow increases in regional raptor populations.	N/A	N/A	Random issuance of firewood permits within aspen, Douglas-fir, spruce-fir and riparian woodland types would be discontinued. Harvest confined to areas where surveys indicate special raptor use activities absent.	No limitation on firewood collection.
	N/A	Long-term site conversion or occupancy of aspen, Douglas-fir, spruce-fir and oakbrush communities would be minimized through redesign or relocation of surface disturbing activities developed during NEPA analysis.	Land use activities that involve long-term, undesirable reductions or fragmentation of aspen, spruce-fir, Douglas-fir, or oakbrush communities would be avoided to the extent possible through relocation and design modifications developed during NEPA analysis. Where unavoidable, special reclamation measures would be required to accelerate reestablishment of former plant community.	Same as Alternative C

Table 2-41 continued

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Maintain the suitability and functional capacity of raptor habitats, including prey base, nest sites, and other special habitat features, to stabilize or allow increases in regional raptor populations.	N/A	N/A	Development proponents would be required to perform raptor nest inventories in suitable nest habitats influenced by authorized land use, allowing a minimum of one full nesting sequence for investigation prior to project implementation.	Development proponents would be required to perform raptor nest inventories in suitable nest habitats when land use influence exceeds 100 acres; where possible, allowing a full nesting sequence for investigation prior to project implementation.
	Prohibit any land-use activity within 0-25 miles of any active raptor nest that would permanently alter the habitat so as to adversely impact nest productivity.	Land use activities within prescribed radii (below) of functional nest sites would be subject to design modifications developed during NEPA process, to minimize adverse alteration of suitable nest habitat. *cavity, cliff, ground-nesting species: 1/4 mile *all special status and tree nesting species: 1/2 mile	Land use activities within prescribed radii (below) of functional nest sites would be subject to relocation or design modifications developed during the NEPA process, to preclude, or reduce to acceptable levels, long-term reduction or deterioration of nest and foraging habitat. *cavity, cliff, ground-nesting species: 1/4 mile *all special status and tree nesting species: 1/2 mile	Same as Alternative C
Maintain the suitability and functional capacity of raptor habitats, including prey base, nest sites, and other special habitat features, to stabilize or allow increases in regional raptor populations.	Retain residual sites for snag-dwelling wildlife, including cavity-nesting raptors, on commercial wood-cutting areas.	Same as Alternative B	Where practical, snags suitable for long and short term cavity excavation will be reserved during woodland clearing or thinning practices at levels equal to or greater than the following: *pinyon-juniper: 1-12" diameter tree/acre or comparable *other conifer types: 2-12" diameter tree/ac or comparable *aspen: 3-12" diameter tree/ac or comparable	Same as Alternative C
	N/A	N/A	Promote development of mature deciduous riparian canopies as raptor nesting habitat where compatible with other resource objectives	Same as Alternative C

Table 2-41 continued

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Protect annual reproductive efforts of breeding raptors, and minimize man-caused raptor mortality	Restrict disruptive land use activities within specified radii of active raptor nest sites through the period of nest occupation via lease and special stipulations, as follows: *non-special status species: 1/4 mile *special status species: 1/2 mile	Restrict disruptive land use activities within specified radii of active raptor nest sites during the period from territory establishment to dispersal of young from nest, via lease and special stipulations as follows: *non-special status species: 1/4 mile *special status species: 1/2 mile *ferruginous hawk: 1 mile	Same as Alternative B, see Appendix B	Same as Alternative C
Protect annual reproductive efforts of breeding raptors, and minimize man-caused raptor mortality.	Prohibit disruptive surface occupation or adverse habitat modification within a buffer encompassing raptor nest sites via NSO stipulations on all land use activities as follows: *listed T/E species: 160 acres *candidate species: 40 acres *non-special status species: 5-10 acres	Prohibit disruptive surface occupation or adverse habitat modification within a buffer encompassing functional nest sites via application of NSO, as follows: *special status species: 1/4 mile radius *non-special status species: 1/8 mile radius	Same as Alternative B, see Appendix B	Same as Alternative C
	New construction or modification of aboveground electric transmission facilities would be required to incorporate the most current raptor protection guidelines.	New construction or modification of aboveground electric transmission facilities would be required to incorporate the most current raptor protection guidelines, and where appropriate, use conductor separation methods rather than features that discourage perching.	Same as Alternative B	Same as Alternative B
Highlight unique or regionally important raptor populations and habitats to increase public awareness and focus management attention.	No Key Raptor Area designation	Designate the saltbush-sagebrush-juniper community north of the White River from Utah to Pinyon Ridge as a BLM Key Raptor Area, administratively highlighting its population of ferruginous hawks.	Same as Alternative B	Same as Alternative B

GROUSE HABITAT MANAGEMENT

Management

Under all alternatives, sage grouse seasonal habitats would be maintained or enhanced by applying surface stipulations listed in Appendix B to all surface-disturbing activities. Maps 2-3, 2-4, and 2-5, this chapter, show locations of no surface occupancy (NSO), timing limitations (TL), and controlled surface use (CSU) stipulations, respectively. Stipulations other than those listed in Appendix B would be applied to land use authorizations involving surface-disturbing activities to protect newly identified and important grouse areas. These stipulations would not violate valid existing rights. Proposed grouse protection measures are listed in Table 2-42.

Under all alternatives grouse habitat would be improved via land treatments. Under all alternatives, vegetation treatments would be implemented to help resolve livestock forage conflicts, reduce key species use, enhance or augment local cover or forage supplies, increase vegetation heterogeneity, and redistribute animal use.

Implementation

Site-specific activity or project plans and accompanying environmental assessments would be prepared in order to implement improvements.

Table 2-42. Protection of Grouse Populations and Habitat

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Protect important seasonal use activities of native grouse populations by restricting disruptive land use influences.	Restrict disruptive land use activities within 1/4 mile of active strutting grounds during the reproductive display period via lease and special stipulations.	Same as Alternative A, applicable to excepted uses within NSO area.	Same as Alternative B	Same as Alternative B
	Surface use activities occurring within suitable nesting or brood habitat or critical winter habitats of sage grouse may be deferred for 60 days through COA or special stipulations developed during NEPA analysis.	Same as Alternative A except timing limitations would be applied to activities that disrupt the utility of crucial sage grouse winter habitats.	Apply timing limitations to activities that disrupt the utility of critical sage grouse winter habitats. When cumulative adverse influences exceed 10 percent of suitable nesting habitat within 2 miles of an associated lek, timing limitations would be applied to further land use activities through the nesting season via lease and special stipulations.	Same as Alternative C
Restore, maintain or enhance habitat conditions and features conducive to the maintenance or expansion of native grouse populations.	Prohibit disruptive surface occupation or adverse habitat modification within a 40-acre parcel encompassing active strutting grounds via NSO application.	Prohibit disruptive surface occupation or adverse habitat modification within 1/4 mile of active strutting grounds via application of NSO or special stipulation.	Same as Alternative B	Same as Alternative B

Table 2-42 continued

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Restore, maintain or enhance habitat conditions and features conducive to the maintenance or expansion of native grouse populations.	Occupation or manipulation of sagebrush stands within 2 miles of a lek and possessing canopies of <40 percent would be avoided as much as practical through project design modifications developed during NEPA analysis.	Avoid surface occupation or adverse modification of: *sagebrush stands with ≤50 percent canopy and ≤30" in height ≤2 miles of a lek. *sagebrush stands with ≤30 percent canopy and ≤30" in height >2 miles from a lek on occupied summer ranges. *any sagebrush stand on slopes ≤20 percent in defined winter concentration areas. *sagebrush stands on slopes ≤20 percent showing evidence of winter use. Where unavoidable or desirable, treatment widths should not exceed 200' and remain interspersed with equal or larger intervals of suitable cover. Cumulative adverse manipulations would not be allowed to exceed 10 percent of suitable nest habitat within 2 miles of a lek.	Same as Alternative B	Same as Alternative B
Restore, maintain or enhance habitat conditions and features conducive to the maintenance or expansion of native grouse populations.	N/A	N/A	Impose CSU stipulation (see Appendix B) on all land use activities that involve aspen, serviceberry and chokecherry communities north of Highway 40 as a means of maintaining the distribution, condition, and functional capacity of high priority wildlife habitats, including grouse.	Same as Alternative C

Table 2-42 continued

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Restore, maintain or enhance habitat conditions and features conducive to the maintenance or expansion of native grouse populations.	Improve or enhance 10,330 acres of grouse habitat in Piceance Basin as follows: *sagebrush would be allowed to naturally reestablish on 1,700 acres treated previously with herbicide at levels not to exceed 40 percent canopy cover. *construct 38 catchments, 9 snow fences, 8 miles riparian fencing and 1 pipeline irrigation system to improve or create 252 acres of brood habitat. *thin 210 acres of dense sagebrush unsuitable as grouse habitat. *8 AMPs would be revised to improve compatibility of livestock grazing with maintenance of herbaceous brood cover. *sharp-tailed grouse would be introduced on 8680 acres in Piceance Basin.	Maximize the extent of brood and nest habitat that retains $\geq$50 percent herbaceous growth by weight through 15 September within high recreation use areas, as follows: *Game Mgmt Unit 10 north of Highway 40 *Reagles, Square S, Dry Duck, Indian Springs, Smith-Crawford, McCarthy and Skinner Ridge allotments.	Maximize the extent of brood and nest habitat that retains $\geq$50 percent herbaceous growth by weight through 15 September on all grouse brood and nest habitats. Livestock redistribution techniques would be employed to defer concentrated use of aspen and other special use habitats until after August 15.	Same as Alternative C
	N/A	Consider establishment or augmentation of sharp-tailed and ruffed grouse in appropriate habitats on a case-by-case basis.	Same as Alternative B	Same as Alternative B
Restore, maintain or enhance habitat conditions and features conducive to the maintenance or expansion of native grouse populations.	Minimize the loss of Douglas-fir communities situated at the heads of draws or on ridge tops in Piceance basin (as important blue grouse winter habitat) through stipulated design modifications developed during NEPA analysis.	Minimize occupancy and long-term seral or type conversions of noncommercial aspen, Douglas-fir, and spruce-fir stands, and deciduous shrub communities through stipulated design modifications developed during NEPA analysis.	Avoid long-term seral or type conversions of all aspen, Douglas-fir, spruce-fir, and deciduous shrub communities. Where unavoidable, apply special stipulations requiring reclamation measures necessary to maintain site potential and restore desired composition and/or seral stage of the former community.	Same as Alternative C
	N/A	Limit seral manipulations of conifer types to maintain a minimum 30 percent of individual noncommercial stands in mature to over-mature age class.	Limit seral manipulations of aspen and conifer types to those specifically designed to enhance stand diversity or achieve special riparian management objectives. Where practical, limit manipulation extent to maintain a minimum 50 percent of individual stands in mature to over-mature age class.	Same as Alternative C

Table 2-42 continued

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Restore, maintain or enhance habitat conditions and features conducive to the maintenance or expansion of native grouse populations.	N/A	Allow reestablishment of comparable or superior varieties of sagebrush within occupied ranges on sagebrush conversion or removal sites $\geq$500 acres. The extent and level of reestablishment will not exceed 20 percent of converted acreage at mature canopy densities of $\leq$15 percent.	Allow reestablishment of comparable or superior varieties of sagebrush when sagebrush removal or conversions in occupied habitat would exceed either of the following conditions: *$\geq$500' distance to suitable sagebrush cover *suitable sagebrush cover comprises <40 percent of cumulative conversion extent. The extent and level of reestablishment will not exceed 30 percent of converted acreage at mature canopy densities of $\leq$15 percent.	Same as Alternative B
	N/A	Use riparian enhancement, livestock management, and water mgmt techniques to emphasize the creation, restoration, and protection of riparian and wet/mesic meadow habitat on all grouse brood ranges.	Same as Alternative B	Same as Alternative B
Restore, maintain or enhance habitat conditions and features conducive to the maintenance or expansion of native grouse populations.	N/A	As funding permits, enhance or expand sage grouse habitats by manipulating suboptimal sagebrush stands or converting stands with undesirable composition to suitable cover types.	Same as Alternative B	Same as Alternative B
	N/A	N/A	Include adapted forms of succulent forbs in seed mixes applied to surface disturbances on grouse brood ranges, subject to reseeding conditions established for each GRA.	Same as Alternative C

FISHERIES HABITAT MANAGEMENT (See Also Special Status Wildlife Habitat Management Section)

Management

Under all alternatives, damage to existing stream fisheries would be avoided or minimized by imposing case-by-case requirements to prevent undue surface disturbance of floodplain components and adjacent vegetation buffers. Map 2-14 shows locations of protected resident fisheries on BLM lands.

Under all alternatives, riparian and channel conditions would be improved on the selected stream segments (see Table 2-43). Under Alternative A, no provisions would be made for the acquisition of aquatic habitat. Under Alternatives B, C and D, the acquisition of stream segments containing the following characteristics would be a priority:

- Aquatic habitats with existing or potential for fishery development, particularly for Colorado River cutthroat trout.

- Fisheries with reasonable existing access or potential to develop BLM access.

Implementation

Damage to stream fisheries would be avoided by requiring pit liners or portable tanks and special reclamation techniques, where necessary, to minimize contaminant and sediment yields.

Under all alternatives, improvement of stream fisheries would be achieved by modifying grazing strategies in AMPs and Section 15 leases through reestablishment of riparian vegetation, installation of in-stream structures, fencing, and beaver management.

Table 2-43. Fisheries Improvement

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
Promote improvement and recovery of current, historic, and potential stream fisheries as a means of increasing populations of sport and native fishes.	Evaluate, on a case-by-case basis, the installation of livestock exclosures to protect and improve fisheries	Modify livestock grazing, construct limited fencing, reestablish vegetation, and manage beaver to improve riparian/channel conditions to no less than fair condition by the year 2000 on stream fisheries > 1/4 mile in length and possessing reasonable public access.	Same as Alternative B	Same as Alternative B
	Prohibit surface occupation or disturbance within 300' of active beaver colonies via application of NSO or special stipulations.	Minimize deterioration of riparian, channel and aquatic conditions in stream fisheries through conditions of approval or special stipulations applied during the NEPA process. Special measures may include, but are not limited to: modified livestock mgmt, vegetation reestablishment, fencing, reserve pit liners or fluid containment systems, facility relocation.	Same as Alternative B	Same as Alternative B

Table 2-43 continued

Management Objective	Alternative A	Alternative B	Alternative C	Alternative D
	N/A	Pursue acquisition of water rights necessary to meet minimum instream flow requirements of cold water fisheries.	Pursue acquisition of water rights necessary to achieve optimum instream flows for cold water fisheries.	Same as Alternative B
Maintain facilities capable of supporting warm-water fisheries.	Maintain impoundments offering conditions suitable for pond fisheries (i.e. Peterson Draw Reservoir, Divide Creek Reservoir). In conjunction with other resource values, enhance aquatic conditions by: controlling excessive aquatic plant growth, establishing desirable shoreline vegetation, restoring reservoir depth and/or controlling sediment input.	Same as Alternative A	Same as Alternative A	Same as Alternative A
Increase recreational fishing opportunities within Resource Area	N/A	Pursue acquisition of aquatic habitats with existing or potential fisheries values, particularly those having existing or developable forms of public access	Same as Alternative B	Same as Alternative B
	Acquire vehicular access to the following BLM Land fisheries: Bitter Creek Soldier Creek Lake Creek Upper East Douglas Big Beaver Creek	Pursue access to landlocked BLM Land fisheries exceeding 1/2 mile in length and >1.5 miles from vehicular access. These criteria are currently met by Bitter and West Fawn Creek	Same as Alternative B	Same as Alternative B

SPECIAL STATUS WILDLIFE HABITAT MANAGEMENT (See Also Raptors Management and Fisheries Habitat Management Sections)

Management

Under all alternatives, surface stipulations listed in Appendix B for special status wildlife would be applied to all surface-disturbing activities. Maps 2-3, 2-4, and 2-5 show locations of no surface occupancy (NSO), timing limitations (TL), and controlled surface use (CSU) stipulations, respectively. Under all alternatives, lease provisions and special requirements derived through *Endangered Species Act* consultation with USFWS would be used to avoid or minimize project involvement with occupied prairie dog habitat. Black-footed ferret surveys would be required in such areas prior to approving surface-disturbing activities.

Under Alternatives B, C, and D, black-footed ferrets would be reintroduced in areas shown on Map 2-15 (58,790 acres). Reintroduction areas are located in heavily concentrated prairie dog areas. It should be noted that BLM and split-estate lands (53,830) as well as private lands (4,960 acres) are shown on Map 2-15 because all land owners would need

to be involved in the reintroduction effort for it to be successful.

Table 2-44 lists those areas designated for black-footed ferret reintroduction, vegetative treatment opportunities, and methods to enhance or maintain conditions necessary for ferret reintroduction. Table 2-45 lists protective standards for bald eagle perches, roosts, and nesting areas. Bald eagle habitat would be protected by surface stipulations listed in Appendix B.

Under all alternatives, aquatic conditions for the Colorado River cutthroat trout would be improved. Table 2-46 compares improvement strategies by alternative.

Implementation

Under Alternatives B, C, and D, black-footed ferret recovery would be initiated in the proposed reintroduction areas; recovery efforts would not be provided for under Alternative A. A black-footed ferret recovery plan would be written in coordination with all land owners in the reintroduction areas.

Under all alternatives, bald eagle winter habitat protection would be provided by stipulating the suppression of fire that threatens mature cottonwood stands and the establishment of a White River integrated activity plan area. Additional protection of bald eagle winter habitat would be facilitated under Alternatives C and D, which recommended an area of critical environmental concern (ACEC) designation for federal lands within one-quarter mile of the White River floodplain.

Under Alternatives B, C, and D, Colorado River cutthroat trout habitat improvement would be implemented through preparation of integrated activity plans.

Table 2-44. Prairie Dog Ecosystems, Including Black-Footed Ferret

Management Action	Alt A	Alt B	Alt C	Alt D
Designation of black-footed ferret recovery and management areas	No designation	Designate 52,050 acres in Lower Wolf Creek and 6,740 acres in Coyote Basin as black-footed ferret recovery areas available for reintroduction of a viable black-footed ferret population pending final suitability analysis and development of an acceptable reintroduction and mgmt plan.	Same as Alternative B	Same as Alternative B
Maintain viable prairie dog ecosystems as habitat for associated species	Minimize surface disturbance of occupied prairie dog colonies via special stipulations imposed during case-by-case NEPA review	Outside of recovery areas, minimize disruption of prairie dog ecosystems via special stipulations imposed during case-by-case NEPA review and Endangered Species Act consultation.	Land use actions that reduce the extent or distribution of prairie dog ecosystems would be allowed only in the interest of maintaining current prairie dog population demography.	Same as Alternative C

Table 2-44 continued

Management Action	Alt A	Alt B	Alt C	Alt D
Promote recovery of black-footed ferret	Develop protective measures for emigrant black-footed ferret on case-by-case basis through Endangered Species Act (ESA) consultation; black-footed ferret surveys generally required in suitable habitat prior to surface disturbance.	Manage recovery areas to enhance black-footed ferret survival and recruitment and maintain capability of site to achieve recovery objectives. Apply surface use stipulations to activities which may compromise ferret recovery objectives via controlled surface use stipulations (Mineral leasing-Appendix B) or as special stipulations applied during NEPA process. Outside recovery areas: Provide notification to mineral lessees via Lease Notice of potential conservation measures necessary to avoid black-footed ferret mortality and minimize adverse changes in habitat suitability. Other land uses subject to same provisions.	Manage recovery areas to enhance black-footed ferret survival and recruitment and maintain or enhance capability of site to achieve recovery objectives. Apply surface use stipulations to activities which may compromise ferret recovery objectives via controlled surface use stipulation (see Appendix B, Surface Stipulations) or as special stipulations applied during NEPA process. Outside recovery areas: Provide notification to mineral lassos via Lease Notice of potential conservation measures necessary to avoid black-footed ferret mortality and maintain or enhance habitat suitability. Other land uses subject to same provisions.	Same as Alternative C
	No specific road density/OHV prescriptions	In recovery areas: restrict vehicles to designated trails; reduce effective road density to 1.5 miles per square mile.	Same as Alternative B	Same as Alternative B
Promote recovery of black-footed ferret	Revise predator control agreements with APHIS and include stipulations applied to preclude unacceptable losses of nontarget wildlife, including black-footed ferret.	Same as Alternative A	Same as Alternative A	Same as Alternative A
	N/A	Make remaining extent of prairie dog complex outside recovery areas available for ferret dispersal and colonization provided conflicts with valid rights reconciled.	Same as Alternative B	Same as Alternative B

Table 2-45. Bald Eagle Recovery

Management Objective	Alt A	Alt B	Alt C	Alt D
Contribute to the recovery of bald eagle populations by maintaining or enhancing suitable riverine cottonwood habitats on federal lands along the White River.	Prohibit vegetation treatments or surface disturbances that would reduce the quantity of riparian woodlands as bald eagle habitat.	Minimize removal of mature or regenerating riverine cottonwood via conditions of approval or special stipulations applied during NEPA process. Special reclamation measures would be attached in event of unavoidable loss to ensure long-term site potential is maintained or restored.	Apply a controlled surface use stipulation would be applied to all land uses within the White River ACEC for the purpose of maintaining or enhancing the long term suitability and utility of, and development opportunities for, bald eagle riverine habitats (see Appendix B). Authorized surface disturbance or use within the ACEC would be contingent on the following conditions: avoidance of mature and regenerating cottonwood to extent reasonably possible, use of special reclamation techniques to accelerate recovery and/or reestablishment commensurate with deterioration, maintenance or restoration of site potential, and maintenance of short and long term habitat utility.	Same as Alternative C
Contribute to the recovery of bald eagle populations by maintaining or enhancing suitable riverine cottonwood habitats on federal lands along the White River.	N/A	Enhance availability and suitability of bald eagle habitats by encouraging development of riverine cottonwood habitat on federally administered lands along the White River via riparian enhancement techniques, including livestock mgmt., fencing and beaver control.	Develop and maintain mature cottonwood canopies suitable for bald eagle roost, perch, and nest substrate. Place overall riparian emphasis on the 950-acre White River ACEC.	Same as Alternative C
Contribute to the recovery of bald eagle populations by maintaining or enhancing suitable riverine cottonwood habitats on federal lands along the White River.	N/A	Pursue acquisition of riverine habitats along the White River possessing high potential for cottonwood "potential natural community" as bald eagle nest and roost substrate.	Same as Alternative B	Same as Alternative B
Prevent disruption of seasonal bald eagle use or activities.	Restrict disruptive land use activities within 1/4 mile of the White River during the winter use period, and within 1/2 mile of active nest sites during the nesting season.	Restrict disruptive land use activities within 1/2 mile of identified winter roosts and concentration areas and active nest sites during respective use periods.	Same as B, see Appendix B	Same as Alternative C

Table 2-45 continued

Management Objective	Alt A	Alt B	Alt C	Alt D
	Prohibit disruptive surface occupation or adverse habitat modification in close proximity to nest sites by establishing 160 acre no surface occupancy around nests.	Prohibit disruptive surface occupation or adverse habitat modification within 1/4 mile of functional nest sites and identified winter roosts and concentration areas via application of no surface occupancy.	Similar to B, see Appendix B	Same as Alternative C

Table 2-46. Colorado River Cutthroat Trout Recovery

Management Action	Alt A	Alt B	Alt C	Alt D
Promote recovery of native Colorado River cutthroat trout populations	Enhance aquatic conditions along 7.6 miles of Lake and Soldier Creeks by fencing riparian habitat, installing in-stream structures and introducing riparian vegetation.	Improve channel and riparian conditions on streams occupied by Colorado River cutthroat trout from poor to fair condition by 1996 and to good condition by 2000, using Riparian Ecosystem Scorecard evaluation or equivalent. Achieve improvements primarily through modified livestock grazing practices, limited fencing, reestablishment of riparian vegetation and beaver mgmt. (currently applicable to about 15 miles of stream in the East Douglas, Trapper's, and Big Beaver Creek drainages).	Same as Alternative B	Same as Alternative B
	Apply no surface occupancy stipulation to all surface disturbing activities in the Lake and Soldier Creek valleys and adjacent slopes >30 percent grade.	Avoid or minimize degradation of channel, riparian, or aquatic conditions associated with Colorado River cutthroat trout fisheries via conditions of approval or special stipulations applied during NEPA process	Prohibit federally authorized land uses within the East Douglas, Trapper's, and Big Beaver watersheds which adversely influence riparian, channel, or aquatic conditions associated with Colorado River cutthroat trout fisheries via application of controlled surface use stipulation (Appendix B, Surface Stipulations) or special stipulations applied during the NEPA process.	Same as Alternative C
Promote recovery of native Colorado River cutthroat trout populations	N/A	Pursue acquisition of water rights necessary to meet minimum instream flow requirements of Colorado River cutthroat trout	Pursue acquisition of water rights necessary to achieve optimum in-stream flows for Colorado River cutthroat trout	Same as Alternative B

Table 2-46 continued

Management Action	Alt A	Alt B	Alt C	Alt D
	N/A	Pursue acquisition of stream habitats with existing, or potential for, Colorado River cutthroat trout fisheries	Same as Alternative B	Same as Alternative B
	N/A	N/A	Establish a 47,610-acre ACEC on that portion of the East Douglas Creek watershed encompassing 90 percent of BLM-administered Colorado River cutthroat trout fisheries in this Resource Area as a means of coordinating land uses in a manner compatible with or complementary to stream habitat recovery.	Same as Alternative C
	N/A	N/A	Within East Douglas ACEC: Restrict vehicles to designated roads and trails; reduce effective road density to 1.5 miles per square mile via abandonments or restricted access.	Same as Alternative C

WILDERNESS MANAGEMENT

Management

Under all alternatives, all six WSAs and the proposed additions to the WSAs (81,190 acres) would be managed in a manner that would not impair their suitability for wilderness designation. Certain activities such as oil and gas leasing and mineral material sales would not be allowed in WSAs unless and until they are released from consideration as wilderness. An exception would be valid existing rights such as grazing, mining, and mineral uses that existed when FLPMA was approved on October 21, 1976, may continue in the same manner and degree as on that date, even if the use would impair wilderness suitability.

Under all alternatives, it is assumed that the boundaries of Bull Canyon, Willow Creek, and Skull Creek WSAs will be modified as shown in the Craig District *Wilderness Study Report* (BLM 1991) and designated by Congress as wilderness. It is also assumed that the Black Mountain, Windy Gulch, and Oil Spring Mountain WSAs will not be designated as wilderness. These assumptions are based on recommendations submitted to Congress via the *Craig District Wilderness Study Report* (BLM 1991). Table 2-47 lists the acreage of each WSA. It also lists the recommended boundary modifications submitted to Congress.

Table 2-47. Secretary of the Interior WSA Recommendations to Congress

Wilderness Study Area	Recommended for Wilderness (Acres)	Not Recommended for Wilderness (Acres)
Bull Canyon	13,700[1/]	147
Willow Creek	13,503[2/]	0

Table 2-47 continued

Wilderness Study Area	Recommended for Wilderness (Acres)	Not Recommended for Wilderness (Acres)
Bull Canyon	13,700[1/]	147
Skull Creek	14,050[2/]	0
Black Mountain	0	9,932
Windy Gulch	0	12,274
Oil Spring Mountain	0	17,740
Total Acres	41,253	39,946

[1/]Includes 1,550 acres outside the existing 12,297-acre WSA and excludes 147 acres within the WSA.
[2/]Includes 135 BLM acres outside the existing 13,368-acre WSA.
[3/]Includes 310 BLM acres outside the existing 13,740-acre WSA.

Management for those WSAs not recommended for wilderness designation (Black Mountain, Windy Gulch, and Oil Spring Mountain) is described throughout the various sections in Chapter 2. Described management is based on the above assumption that these WSAs will be released from wilderness consideration and managed for uses other than wilderness. Management varies by alternative.

Management for those WSAs recommended for wilderness designation (Bull Canyon, Willow Creek, and Skull Creek WSAs) is not described in this chapter, given the assumption that these WSAs will be designated as wilderness and managed under the provisions of the *Wilderness Act*. Appendix E describes management of these WSAs should they not be designated as wilderness.

Implementation

Projects proposed within WSAs would be analyzed to determine whether they would impair the suitability of such areas for wilderness designation. With the exception of valid existing rights, projects that would impair would be denied.

A wilderness management plan will be written for each area designated as wilderness. Designated wilderness areas will be managed under the provisions of the *Wilderness Act* to preserve wilderness character and provide for the public purposes of recreational, scenic, scientific, educational, conservation, and historical use. Areas not designated as suitable will be released from wilderness review and managed as described throughout Chapter 2 and in Appendix E.

WILD AND SCENIC RIVERS MANAGEMENT

Management

Of the 13 river and stream corridors inventoried for wild and scenic river characteristics, 8 were found eligible for consideration (see Appendix J). Table 2-51 lists the river segments studied and the results of the study. Table 2-52 lists the tentative classifications assigned to each eligible river or stream sections.

Table 2-48. Wild and Scenic River Eligibility Determination

River Segment	Eligibility	
	Eligible (Miles/BLM Acres)	Not Eligible (Miles/BLM Acres)
North Fork, White River	N/A	25 Miles/440 Acres[1/]
South Fork, White River	44 Miles/50 Acres[2/]	N/A
White River, Segment A	N/A	75 Miles/4,200 Acres
White River, Segment B	22 Miles/2,400 Acres	N/A
White River, Segment C	11 Miles/770 Acres	N/A
Deer Gulch Creek	N/A	4.5 Miles/1,140 Acres
Piceance Creek	N/A	57 Miles/5,050 Acres
East Douglas Creek	20 Miles/3,190 Acres	N/A
Cathedral Creek	14 Miles/2,060 Acres	N/A
Lake Creek	14 Miles/2,520 Acres	N/A
Soldier Creek	13 Miles/1,520 Acres	N/A
Bear Park Creek	5 Miles/980 Acres	N/A
Big Beaver Creek	18 Miles/280 Acres	N/A
Total	160 Miles/13,770 Acres	161.5 Miles/10,830 Acres

[1/]Determined by the USFS to be not eligible.
[2/]Determined by the USFS to be eligible.

Table 2-49. Tentative Classifications for Eligible River and Stream Sections

River Segment	Tentative Classification		
	Wild (Miles/Acres)	Scenic (Miles/BLM Acres)	Recreational (Miles/BLM Acres)
White River, Segment B	N/A	N/A	22 Miles/2,400 Acres
White River, Segment C	N/A	N/A	11 Miles/770 Acres
East Douglas Creek	N/A	N/A	20 Miles/3,190 Acres
Cathedral Creek	N/A	N/A	14 Miles/2,060 Acres
Lake Creek	N/A	14 Miles/2,520 Acres	N/A
Soldier Creek	N/A	N/A	13 Miles/1,520 Acres
Bear Park Creek	N/A	N/A	5 Miles/980 Acres
Big Beaver Creek	N/A	N/A	18 Miles/280 Acres
Total	N/A	14 Miles/2,520 Acres	103 Miles/11,200 Acres

Of the 8 eligible river and stream segments, none have been recommended in this RMP as suitable for wild and scenic river designation. Under all alternatives, the 8 eligible river and stream segments will be managed to preserve their wild and scenic river characteristics until such time as they are dropped from consideration. It is assumed that the RMP recommendation will be accepted and the 8 eligible river and stream segments will be released from consideration with the signing of the approved RMP and record of decision.

It should be noted that, under Alternative D, BLM lands along the White River have been proposed for designation as an area of critical environmental concern (ACEC). The White River would receive no special management designation under Alternatives A, B, and C (see ACEC section, this chapter). The Cathedral Creek complex would be included in the proposed Cathedral Bluffs ACEC, and threatened and endangered fish species would be protected in all river segments as mandated by the *Endangered Species Act*.

All eligible river and stream segments were analyzed for suitability by applying the eight criteria required in BLM Manual 8351.

Implementation

Protective management of eligible river segments was initiated by the White River Resource Area Manager upon determination of eligibility. Under all alternatives, eligible segments in the White River Resource Area would be protected from new federally built, permitted, or licensed dams, plus other water resource projects which would have a direct and adverse effect on the free-flowing values of the river.

Under all alternatives, eligible river segments would be monitored to ensure the protection of those free-flowing and outstandingly remarkable values that justified eligibility.

The eligibility, classification, and suitability data compiled in this wild and scenic river study would be reviewed in future planning projects.

VISUAL RESOURCE MANAGEMENT

Management

Under all alternatives, visual resource management (VRM) classes would be assigned to the various landscapes in the resource area. These classifications correspond to the management objectives in an area and indicate the level of acceptable change that could occur within the class. VRM classes proposed under Alternative D are shown on Map 2-18 (at the end of the chapter). Restrictions on shape, form, color, and texture would be used to maintain the VRM class and level of acceptable change. Table 2-50 identifies the level of acceptable change that could occur within each VRM class. It should be noted that NSO stipulations would not be applied in Class II areas. However, permits to occupy the surface may involve high costs to meet VRM class restrictions.

Table 2-51 lists some of the more important and visually sensitive areas and their VRM class by alternative. Table 2-52 lists the number of acres within each class under each alternative.

Table 2-50. VRM Levels of Acceptable Change

VRM Class	Restrictions	Level of Acceptable Change
Class I	Natural ecological changes would predominate. Management activities must not attract attention and must blend in with natural landscape.	Very low
Class II	Changes would repeat the basic elements of form, line, color and texture found in the predominant features of the characteristic landscape. Management activities would not attract attention of the casual observer.	Low
Class III	Management activities may attract attention but would not dominate the view of the casual observer. Changes would repeat the basic elements found in the predominant natural features.	Moderate

Table 2-50 continued

VRM Class	Restrictions	Level of Acceptable Change
Class IV	Management activities may dominate the view and be the major focus of viewer attention. Impact of activities would be minimized through careful location, minimal disturbance, and repeating basic elements of natural features.	High

Table 2-51. Visual Resource Management Classes in Selected Areas

Visually Sensitive or Important Area	Alt A (Class)	Alt B (Class)	Alt C (Class)	Alt D (Class)
Wilderness Areas (Bull Canyon, Skull Creek, and Willow Creek WSAs)[1/]	N/A (II/IV)	I	I	I
Scenic Easement Along Harper's Corner Road	II	II	II	II
Highway 132 Scenic Byway Corridor	II	II	II	II
Blue Mountain Special Recreation Management Area (SRMA)	N/A (II/ III/IV)	N/A (II/ III/IV)	II	II
Oak Ridge State Wildlife Area (No Lease)	II/IV	II/IV	II/IV	II/IV
Deer Gulch Designated ACEC	III	III	II	II
Lower Greasewood Creek Designated ACEC	IV	III	II	II
South Cathedral Bluffs Designated ACEC	III	II	II	II
Dudley Bluffs Designated ACEC	IV	III	II	II
Yanks Gulch/Upper Greasewood Creek Designated ACEC	IV	IV	II	II
Raven Ridge Designated ACEC	III	IV	II	II
South Cathedral Bluffs ACEC Proposed Addition	N/A (III)	II	II	II
North Cathedral Bluffs Proposed ACEC	N/A (III/IV)	III	N/A (II)	N/A (II)
Soldier Creek Proposed ACEC	N/A (III/IV)	III	N/A (II)	N/A (II)
Raven Ridge Proposed ACEC Addition, Ryan Gulch, White River Riparian, Coal Oil Rim, Moosehead Mountain, Oil Spring Mountain, Black's Gulch, Coal Draw, East Douglas Creek, and Duck Creek Proposed ACECs	N/A (II/ III/IV)	N/A (III/IV)	II	II
Texas-Missouri-Evacuation Creek Proposed ACEC	N/A (IV)	N/A (IV)	II	N/A (II/ III)

N/A = Would not receive a special designation (SRMA or ACEC) under this alternative; however, the VRM class for the area in which it would be located is shown in parenthesis.

[1/]All six WSAs are presently managed under Class I objectives. For purposes of analysis, it was assumed that only Bull Canyon, Skull Creek, and Willow Creek WSAs will be designated as wilderness under all alternatives.

Table 2-52. Visual Resource Management Classes

VRM Class	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Class I	0	41,250	41,250	41,250
Class II	460,700	429,000	434,760	412,250
Class III	403,100	414,450	839,170	861,680
Class IV	1,415,800	1,403,320	146,100	146,100

Implementation

Visual management classes would become effective upon signature of the approved RMP and record of decision. No further planning would be required to implement the decisions. Proposed projects would be evaluated for consistency with VRM classification objectives. Projects that would noticeably change the characteristic landscape would be modified to blend in with the characteristic landscape, would be denied, or would be moved to another more suitable locations.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT

Proposed Management

Under Alternative A, the existing area of critical environmental concern (ACEC) designations would continue, and no new ACECs would be designated. Under Alternatives B, C, and D, additional ACECs would be designated. Table 2-53 shows ACEC proposals under each alternative and acres of BLM land within each ACEC. Map 2-19 shows locations of existing and proposed ACECs.

Table 2-53. ACEC Proposals (BLM Land Acres)

ACEC	Reason for Designation	Alt A	Alt B	Alt C	Alt D
Designated ACECs and Colorado Natural Areas					
Deer Gulch	Sensitive plants and remnant vegetation associations (RVAs)	1,810	1,810	1,810	1,810
Lower Greasewood Creek	Sensitive plants and RVAs	210	210	210	210
South Cathedral Bluffs	Sensitive plants and RVAs	320	320	320	320
Dudley Bluffs	T/E plants, sensitive plants, and RVAs	1,630	1,630	1,630	1,630
Yanks Gulch/Upper Greasewood Creek	T/E plants, sensitive plants, and RVAs	2,680	2,680	2,680	2,680
Raven Ridge	Candidate T/E plants, sensitive plants, and RVAs	2,090	2,090	2,090	2,090
Total Designated		8,740	8,740	8,740	8,740
Proposed ACECs					
South Cathedral Bluffs - Addition	Sensitive plants	N/A	1,010	1,010	1,010

Table 2-53 continued

ACEC	Reason for Designation	Alt A	Alt B	Alt C	Alt D
Raven Ridge - Addition	Candidate T/E plants, sensitive plants, paleontological values, fragile soils	N/A	N/A	2,890	2,890
Ryan Gulch	T/E plants	N/A	N/A	1,440	1,440
North Cathedral Bluffs	Sensitive plants, scenic values	N/A	5,730	N/A	N/A
Soldier Creek[1/]	Sensitive plants and RVAs, candidate Colorado cutthroat trout	N/A	2,150	N/A	N/A
White River Riparian	Important biologically diverse plant communities. Bald eagle roosts, federally-listed Colorado River squawfish below Taylor Draw Dam.	N/A	N/A	950	950
Coal Oil Rim	Small aspen clones and other biologically diverse plant communities, riparian habitats	N/A	N/A	3,210	3,210
Moosehead Mountain	Important biologically diverse plant communities, riparian habitats, and cultural resources	N/A	N/A	8,940	8,940
Oil Spring Mountain[2/]	Spruce-fir and important biologically diverse plant communities	N/A	N/A	18,260	18,260
Black's Gulch	Paleontological values	N/A	N/A	800	800
Coal Draw	Paleontological values	N/A	N/A	1,840	1,840
Texas-Missouri-Evacuation Creek	Cultural resources	N/A	N/A	22,510	N/A
East Douglas Creek	Important biologically diverse plant communities, riparian habitat, and federal candidate Colorado River cutthroat trout habitat	N/A	N/A	47,610	47,610
Duck Creek	T/E plants and cultural resources	N/A	N/A	3,430	3,430
Total Proposed		-0-	8,890	112,890	90,380
Total Existing and Proposed		8,740	17,630	121,630	99,120

Note: N/A indicates the area would not be designated an ACEC under this alternative.
[1/]Soldier Creek proposed ACEC under Alternative B would become part of East Douglas Creek proposed ACEC under Alternatives C and D
[2/]Assumes Oil Spring Mountain WSA would not be designated wilderness. Oil Spring Mountain would be designated an ACEC under Alternatives C and D and receive no special designation under Alternatives A and B.

Base surface stipulations would be assigned to each ACEC (see Appendix B) to protect resources of concern for which the ACEC was designated. The base stipulations would be either controlled surface use (CSU), no surface occupancy (NSO), or combinations of both. Stipulations other than base stipulations would also apply within the ACECs (Table 2-54). These stipulations would apply whether or not the area were designated as an ACEC. Appendix F describes other management that would apply with each ACEC.

Table 2-54. ACEC Acres of BLM and Split-Estate Lands Subject to Surface Stipulations

Surface Stipulation	Alternative			
	Alt A	Alt B	Alt C	Alt D
No Surface Occupancy (plants, wildlife, cultural resources)	4,440	4,600	26,770	26,770
Timing Limitations (wildlife)	5,830	7,020	98,100	98,100
Controlled Surface Use (wildlife and soils)	7,440	8,630	99,060	99,060

Implementation

ACEC designations would become effective upon signature of the approved RMP. ACECs would be managed as outlined in Appendix F and ACEC plans or integrated activity plans.

Under Alternatives A, B, and C, existing ACEC activity plans (Dudley Bluffs, South Cathedral Bluffs, and Raven Ridge) would be revised to be consistent with decisions in the approved RMP. ACEC activity plans would be prepared for any new ACECs designated under Alternatives B and C.

Under Alternative D, management of existing and new ACECs would be included in integrated activity plans (see Integrated Activity Plan Section, Chapter 1). Individual activity plans would be developed for ACECs that are not located outside of integrated activity plan areas.

SRMAs and ERMAs

An SRMA is an area identified for intensive management to achieve specific recreation objectives. SRMAs require BLM to take action in order to provide specific recreation opportunities. BLM recreation investments are concentrated in these areas. SRMAs typically provide structured recreation opportunities.

An ERMA is the area outside the SRMAs (remainder of the resource area) where intensive management is not required, where user problems are limited, where few specific recreation objectives are identified, and where custodial management is preferred. Limited management actions (access, visitor services, signs, some facilities, resource protection, etc.) are usually adequate. ERMAs typically provide unstructured recreation opportunities.

RECREATION MANAGEMENT

Management

Under Alternatives A, B, and C, special recreation management areas (SRMAs) would be delineated for intensive management. Structured recreation opportunities and physical, social, and managerial settings would be provided for targeted recreation experiences in these areas as described in Table 2-55. The BLM lands not administered as SRMAs would be managed as the White River Extensive Recreation Management Area (ERMA). The White River ERMA would be managed custodially to provide unstructured recreation opportunities.

Under Alternative D, SRMAs would not be identified. The remainder entire resource area would be identified as the White River ERMA and managed custodially to provide unstructured recreation opportunities as described in Table 2-57. Two areas within the ERMA (the Blue Mountain Geographic Reference Area (GRA) and the White River ACEC) would be managed to provide specific recreation activity opportunities and physical, social, and managerial settings for targeted recreation experiences and benefits. Table 2-56 specifies settings and targeted activities in these two areas. Map 2-20 shows recreation opportunity spectrum (ROS) management classes that would be maintained in the Blue Mountain GRA and White River ACEC for Alternative D. It also shows ROS management classes for other selected areas noted in Table 2-57 for Alternative D.

Under all alternatives, certain management actions and objectives would be applied in the extensive recreation management area. A diversity of outdoor recreation opportunities, activities, with resulting experiences and benefits would be maintained and protected. Specific objectives follow:

SETTINGS AND RECREATIONAL EXPERIENCES

Physical settings consider degrees of naturalness or remoteness desired in an area; social settings consider contacts with (frequency and type) others and evidence of others; and managerial settings consider the intensity of visitor management required to achieve the desired physical and social settings, visibility and compatibility of existing or proposed land management practices with the desired physical and social settings, and types of motorized vehicle use that would be allowed within each setting.

The settings are defined using recreational opportunity spectrum (ROS) management classes shown in Appendix G: (1) P (primitive), (2) SPNM (semi-primitive nonmotorized), (3) SPM (semi-primitive motorized), (4) RN (roaded natural), (5) R (rural), and (6) MU (modern urban).

The ROS setting determines the types of experiences the visitors can achieve while engaged in a recreation activity and the lasting benefits they may take with them. Benefits can be identified for (1) individuals, (2) society, (3) economic benefits, and (4) environmental benefits.

1. Visitor Services: Recreation information would be provided to the public through maps, brochures, publications or other means to ensure public awareness of available recreation opportunities, to promote public health and safety, prevent resource deterioration by promoting user ethics, and mitigate conflicts. Locations, access, opportunities, management objectives, safety and other information would be highlighted in publications. A sign plan would be completed, implemented and maintained to identify public lands, provide direction, locations, safety and interpretation information.

2. Land Tenure adjustments and Access:

a. Access to public lands would be acquired, developed, and maintained where demand, recreational values, and sufficient size warranted legal and/or physical access. This access would be acquired through easement, agreement, exchange or other means. Geographic areas identified for access acquisition are discussed in the Access Section.

b. Lands would be acquired where: (1) There is high demand for highly valued recreation opportunities, (2) Key areas are needed to block public lands for management purposes, (3) to mitigate conflicts, and (4) recreation development may occur such as trailheads, boat launch sites, camp areas, interpretive sites.

3. Facilities Management and Services: Facilities would be provided to accommodate visitor health and safety and allow use of public lands resources. Parking areas, trailheads, sanitary facilities, camp areas, kiosks and other limited facilities to support trails, interpretative sites, and watchable wildlife sites would be developed in partnerships with the private sector.

4. Partnerships: A recreation-tourism community partnership would be pursued. The purpose of the partnership would be to protect natural and cultural resources, develop recreation resources, and enhance local economic growth and stability through rural recreation/tourism development. The partnership would involve land managers, local governments and interests, the tourism industry, and land managing agencies.

Under all alternatives, special recreation permits (SRPs) would be issued to qualified outfitters and guides based on demand. Permits would primarily be for upland big game, lion, and bear. Under Alternatives C and D, allocations would be made based on prior use history, responsiveness, and proven responsibility of applicants when limits of acceptable change thresholds are exceeded for a given area.

Implementation

SRMA and ERMA delineations would become effective upon signature of the approved RMP and record of decision. Specific management of SRMAs and the White River ERMA would be included in individual project plans or in integrated activity plans written following publication of the approved RMP. An environmental assessment would be prepared for each project plan or integrated activity plan.

Table 2-55. Existing and Proposed Special Recreation Management Areas (Alternatives A, B, and C)

SRMA	Alt A	Alt B	Alt C	Proposed Management
Piceance Basin	210,000 acres	N/A	N/A	Targeted Activities: Hunting, camping Settings to be Maintained: (1) Physical - SPM, RN; (2) Social - SPNM, SPM, RN; (3) Managerial - SPNM, SPM Major Management Actions: Consists of 4 units, Spring Creek, Cathedral Bluffs, Dry Fork and Cow Creek; Provide access/ parking areas; Establish a nonmotorized hunting area in the Cow Creek Unit (Aug 15 to Nov. 30); seasonal visitor services program with contact stations for hunters, maps, and signs.
Black Mountain/ Windy Gulch	N/A	N/A	26,470 acres	Targeted Activities: Hunting, horseback riding, hiking, backpacking, wildlife viewing, nature study. Settings to be Maintained: (1) Physical - SPNM, SPM; (2) Social - SPNM, SPM; (3) Managerial - P, SPNM, SPM Major Management Actions: Provide parking, interpretive, sanitation and trailhead facilities in Beefsteak Gulch area; provide access to Windy Gulch; develop a recreation area at Beefsteak Gulch for picnicking, camping, mountain biking; fishing and float boat launch on the White River (White River ACEC); and nature study/interpretation.
Lower White River/ Kenney Reservoir	N/A	4,890 acres	N/A	Target Activities: Floatboating, picnicking, wildlife viewing, camping. Settings to be Maintained: (1) Physical - SPNM, SPM, RN, R; (2) Social - SPNM, RN; (3) Managerial - SPNM, RN Major Management Actions: Provide river access; boat launch, parking, camping, wildlife viewing, and interpretive facilities; Provide user information.
Rangely	N/A	N/A	410,800 acres	Targeted Activities: Mountain biking, river boating, fishing, camping, picnicking, cultural resource education/interpretation, environmental education, scientific study. Settings to be Maintained: (1) Physical - SPM, RN, R, MU; (2) Social - SPM, RN; (3) Managerial - SPM, RN Major Management Actions: Develop & maintain trails for hiking, mountain biking; provide facilities for picnicking, camping, interpretation, parking, boat launch; provide access to the White River & other high value recreation areas.
Total	210,000	4,890	438,270	

N/A = Would not be an SRMA under this alternative

Table 2-56. Proposed Recreation Management for Blue Mountain GRA and White River ACEC (Alternative D)

Proposed Management
Blue Mountain GRA North (Between County Road 16 and Dinosaur National Monument)
Targeted Activities: Trophy big game and upland bird hunting; mountain biking; scenic viewing; horseback riding; pleasure driving. Settings to be Maintained: (1) Physical: SPNM, SPM, RN, R; (2) Social: SPNM, SPM, RN; (3) Managerial: SPNM, SPM, RN Benefits/Experiences: Manage to provide experiences and benefits related to (1) individual - cultural/historical/rural lifestyle learning, quality of life/satisfaction, and challenge, (2) socio-cultural - environmental sensitivity, (3) economic - local economic growth/stability, and (4) environmental - enhanced environmental ethic. Major Management Actions: Acquire access and key inholdings; manage as VRM Class II; encourage private sector development of a 30-50 unit tent campground somewhere along Harper's Corner Road; accommodate RV camping in town of Dinosaur; identify mountain bike routes; pursue a scenic byway partnership.

Table 2-56 continued

Proposed Management
Blue Mountain GRA South (Between U.S. Highway 40 and County Road 16)
Targeted Activities: Wilderness hiking and backpacking; trophy big game and upland bird hunting; mountain biking; scenic viewing; horseback riding and pleasure driving. Setting to be Maintained: (1) Physical - SPNM, SPM, RN, R; (2) Social - P, SPNM, SPM, RN, R; (3) Managerial - P, SPNM, SPM, RN Benefits/Experiences: Manage to provide experiences and benefits related to (1) individual - tranquility, solitude, nature and cultural learning, physical health and maintenance, sense of adventure, aesthetic appreciation, and challenge, (2) socio-cultural - environmental sensitivity, (3) economic - local economic growth/stability; and (4) environmental - enhanced environmental ethic. Major Management Actions: Acquire WSA access and key inholdings; manage as VRM Classes I and II; encourage private sector development of a 30-50 unit tent campground somewhere along Harper Corner Road; accommodate RV camping in town of Dinosaur; allow no camping in Moosehead Mountain road closure area; designate mountain bike routes connecting to Yampa Valley Trail in DNM, Harper's Corner Road to Town of Dinosaur, and Moosehead Mountain to Skull Creek Rim.
White River ACEC (Meeker to Kenney Reservoir)
Targeted Activities: River floatboating (open canoeing) and fishing, camping. Settings to be Maintained: (1) Physical - RN, R; (2) Social - RN; (3) Managerial - RN Benefits/Experiences: Manage to provide experiences and benefits related to (1) individual - cultural/historical/rural lifestyle, quality of life/satisfaction, family orientation; (2) socio-cultural - environmental sensitivity; (3) economic - local and regional economic growth/stability, and (4) environmental - enhanced environmental ethic. Major Management Actions: Provide river access; retain BLM lands; establish launch sites/parking and interpretive facilities; allow camping only in designated sites (sites to be determined when developing RAMPs or integrated activity plans.
White River ACEC (Kenney Reservoir to Shavetail Bridge)
Targeted Activities: Open canoeing; cold- and warm-water fishing; camping. Settings to be Maintained: (1) Physical - R, MU; (2) Social - RN; (3) Managerial - RN Benefits/Experiences: Manage to provide experiences and benefits related to (1) individual - cultural/historical/rural lifestyle, quality o life/satisfaction, family orientation; (2) socio-cultural - environmental sensitivity; (3) economic - local and regional economic growth/stability, and (4) environmental - enhanced environmental ethic. Major Management Actions: Develop watchable wildlife sites and trails at Kenney Reservoir in partnership with others; develop rock art interpretive site at reservoir; develop boat launch/parking above Shavetail Bridge; monitor river use; provide user ethics and information.
White River ACEC (Shavetail Bridge to Utah Border)
Targeted Activities: Open canoeing; warm- and cold-water fishing; camping. Settings to be Maintained: (1) Physical - SPM; (2) Social - SPNM; (3) Managerial - SPNM Benefits/Experiences: Manage to provide experiences/benefits related to (1) individual - independence, tranquility, solitude, scenery, (2) socio-cultural - environmental awareness/sensitivity, (3) economic - local and regional economic growth/stability, and (4) environmental - enhanced environmental ethic. Major Management Actions: Acquire shoreline tracts; manage VRM Class II; retain existing BLM public lands; monitor river use; provide user ethics and information; encourage private sector development of canoe livery and shuttle service; camping only in designated sites (sites to be designated when developing integrated activity plans). Coordinate management with Utah BLM.

Table 2-57. General Management Strategies for the White River ERMA

Alternative A	Alternative B	Alternative C	Alternative D
All of the resource area except for Piceance Basin SRMA.	All of resource area except for Lower White River/ Kenney Reservoir SRMA.	All of the resource area except for Rangely SRMA	All of the resource area except for Blue Mountain GRA and White River ACEC.

Table 2-57 continued

Alternative A	Alternative B	Alternative C	Alternative D
ROS Management Classes: Physical, social and managerial ROS classes within the ERMA would be unspecified.	*ROS Management Classes*: Maintain physical, social, and managerial ROS classes in locations listed below within the ERMA; ROS settings in the remainder of the ERMA would be unspecified: 1. Lion Canyon/Lobo Mountain Area: SPNM and SPM 2. LO7 Area: SPNM and SPM 3. Cow Creek Area: SPNM from Aug 15 to Nov 30; SPM remainder of year 4. Dunkley and Ripple Creek Pass: RN, R	*ROS Management Classes*: ROS settings within the ERMA would be unspecified.	*ROS Management Classes*: ROS classes in the ERMA would be unspecified.
Recreation Facilities: None	*Recreation Facilities*: *Picnic/Camping Sites*: Lion Canyon/Lobo Mountain area, Divide Creek Reservoir, and Peterson Draw Reservoir. *Interpretative Sites for Environmental Education and Watchable Wildlife*: Develop sites along Highways 13, 40, 64, 139, Lion Canyon/Lobo Mountain Area. *Parking/Hang Gliding Launch Site*: Cathedral Bluffs area. *Scenic Byway*: Manage Dunkley and Ripple Creek Pass as extension of Flat Tops Scenic Byway. *Trails*: Develop hiking/mountain bike trails. Trails might include the Ute Trail and Dominguez-Escalante Trail, Rangely loop, Dinosaur, Scenery Gulch, Cathedral Bluffs; links to the Kokopelli Mountain Bike Trail and Yampa Valley Trail.	*Recreation Facilities*: *Picnicking/Camping*: Camping only in designated sites along the White River. *Interpretative Sites for Cultural Resources*: Develop interpretive sites in Dragon Trail, Canyon Pintado, and Dripping Rock Cave areas.	*Recreation Facilities*: *Picnicking/Camping Sites*: Divide Creek Reservoir and Peterson Draw Reservoir. (Overnight camping prohibited in Moosehead Mountain Road Closure Area and Oak Ridge State Wildlife Area). *Interpretative Sites for Cultural Resources*: Develop cultural resource interpretive sites in the Dragon Trail, Canyon Pintado, and Dripping Rock Cave areas. *Trails*: Develop hiking/mountain bike trails on BLM lands as demand/need dictates. Trails might include the Ute Trail and Dominguez-Escalante Trail, Rangely loop, Dinosaur, Scenery Gulch, Cathedral Bluffs, China Wall/Lion Canyon/Lobo Mountain (Uinta railroad into Utah); links to the Kokopelli Mountain Bike Trail and Yampa Valley Trail.
		Motorized Vehicles: Designate an open area (motorized vehicles allowed both on and off roads and trails) in Coal Oil Basin.	*Motorized Vehicles*: No motorized vehicles allowed in Cow Creek, Timber Gulch/Hay Gulch from Aug 15 to Nov 30. Designate an open area (motorized vehicles allowed both on and off roads and trails) in Coal Oil Basin.

MOTORIZED VEHICLE TRAVEL MANAGEMENT

Management

Under Alternative A, motorized vehicles would be allowed both *on and off* roads and trails throughout the resource area except for the areas listed in Table 2-58 as *closed*.

Under Alternative B, motorized vehicles would be allowed only *on existing roads and trails*. Motorized vehicles would not be allowed *off roads and trails*.

Under Alternatives C and D, motorized vehicles would be allowed only *on designated roads and trails*. Motorized vehicles would not be allowed *off roads and trails*. WSAs designated as wilderness would be closed to all motorized vehicle travel (Map 2-21 at the end of the chapter). Coal Oil Basin would be *open* to both *on- and off-road* motorized vehicle travel. Two areas would be *closed except for permitted uses* (Table 2-58).

Table 2-58. Areas Closed to Both On- and Off-Road Motorized Vehicle Travel

Area	Alt A	Alt B	Alt C	Alt D
Closed to All Motorized/Mechanized Vehicles - No Exceptions				
WSAs Designated as Wilderness[2/]	41,250	41,250	41,250	41,250
Closed to Off-Road Travel but Open to Permitted On-Road Travel (Closed/Permitted)[1/]				
Soils Management Priority Areas	16,490	N/A	N/A	N/A
Moosehead Road Closure Area	6,260	6,260	6,260	6,260
Oak Ridge State Wildlife Area	N/A	N/A	9,300	9,300
Fragile Soil Areas	N/A	N/A	791,300	N/A
High/Medium Priority Riparian Habitat	N/A	N/A	410	N/A

[1/] Only holders with permits or valid existing rights, such as ranchers or oil companies, would be allowed to drive *on existing roads and trails* in these areas. Vehicles would not be allowed *off existing roads and trails*. The general public would not be allowed in these areas, which are usually gated and locked.
[2/] Acreage shown assumes only Bull Canyon, Skull Creek and Willow Creek WSAs will be designated as wilderness (see Wilderness Management Section, this chapter)

Under Alternatives C and D, all roads and trails would be designated as to types of use and seasons of use. Table 2-59 lists the various designations identified to date. Some roads would be *closed and abandoned*. A road density objective would be used in closing roads and trails. The objective would be to limit the number of miles of roads to 1.5 miles/square mile in critical wildlife habitats and 3 miles/square mile in noncritical wildlife habitats. Table H-1, Appendix H, lists the existing and proposed road densities by GRA and 7.5 minute quadrangle map.

Road and trail designations would be subject to change based on criteria listed in Table 2-60. It should be noted that the decision to designate roads and trails and the criteria used to change designations would be an RMP decision. The actual road and trail designations would not be part of that decision.

Table 2-59. Road and Trail Designations

Designation	Code	Description
Open motorized	OM	Open to all motorized vehicles year-round. No off-road travel allowed.
Open to ATVs and below	OA	Open only to ATVs and below. No off-road travel allowed.
Open to horse and foot travel only	ONM	No motorized vehicles or mechanized equipment allowed. Open only to horse and foot travel.
Closed and abandoned	C	Road is or will be closed and rehabilitated.
Closed permitted	CP	Road or trail is closed to the general public. It is open to holders of valid existing rights. No off-road travel allowed.
Private	P	Private road.
Seasonal closure/open motorized	CS/OM	Closed from 5/15-8/1. Open to motorized vehicles from 8/2-5/14.
Seasonal closure/open ATVs and below	CS/OA	Closed from 5/15-8/1. Open to ATVs and below only from 8/2-5/14
Seasonal closure/open motorized vehicles	CS/OM	Closed from 5/16-8/31. Open to motorized vehicles from 9/1-5/15.
Seasonal closure/open ATVs and below	CS/OA	Closed from 9/15-5/1. Open to ATVs and below only from 5/2-9/14.
Seasonal closure/open motorized vehicles	CS/OM	Closed from 11/15-6/1. Open to motorized vehicles from 6/2-11/14.
Seasonal closure/open ATVs and below	CS/OA	Closed from 11/15-6/1. Open to ATVs and below only from 6/2-11/14.
Seasonal closure/open nonmotorized	CS/ONM	Closed from 8/15-11/30. Open to nonmotorized vehicles and nonmechanized equipment from 12/1-8/14.

Table 2-60. Criteria for Changing Road and Trail Designations

Criteria for Adding Roads	Criteria for Closing Roads
Degree to which there is a demonstrated public need or change in such need	Road density objective: Average of 1.5 miles/square mile in critical wildlife habit and 3 miles/square mile elsewhere
Relative maintenance costs/considerations	Enforceability of the designation
Administrative use demand (external as well as internal)	Relative maintenance costs/considerations
Presence or lack of critical resource values, e.g. ability to impact vs enhance these values	Administrative use demand (external as well as internal)
	Resource damage

DESIGNATION PROCESS

All known roads and trails in the White River Resource Area are presently being entered into a computer data base. These roads and trails are being labeled with preliminary road and trail designations that are subject to change as the process continues, public comment is received, and as road needs change. The roads and trails with preliminary labels will be printed out on 7.5-minute quadrangle maps. Because of their large size, the maps will not be mailed to persons on the RMP mailing list but will be available for review at the public hearings for the draft RMP. They also will be available in the White River Resource Area Office, the Craig District Office, and the Colorado State Office.

The information entered in the data base was the best available at this time; therefore, many of the maps may contain errors. The errors will be corrected as they are noted.

The next step in the process will be to number all roads and trails in the road system. The numbered roads and trails and the computer data base will be updated and maintained.

Implementation

Under Alternative A, no additional work would be necessary. Under Alternative B, no additional work would be necessary to implement the existing road closures (Moosehead area and Oak Ridge State Wildlife Area).

Under Alternatives C and D, roads and trails would be signed following publication of the approved RMP and record of decision. Small-scale maps (7.5 minute quadrangle) showing road and trail numbers and designations would be prepared and made available for public viewing in the White River Resource Area. *Federal Register* notices would be prepared to notify the public of road closures and of the availability of small-scale maps.

As proposals for new construction and renovation are received, NEPA documents would be prepared to analyze impacts and determine appropriate designations and potential for "replacement" of other roads. Any road closures would be announced in the *Federal Register* but would not require an RMP amendment so long as the above criteria are followed. The computer data base would be maintained and updated accordingly.

CULTURAL RESOURCE MANAGEMENT

Management

Under all alternatives, consultation under *Section 106 of the National Historic Preservation Act* would be conducted for all federal undertakings in accordance with the Programmatic Agreement between the Colorado State Historic Preservation Officer (SHPO), BLM, and the Advisory Council on Historic Preservation (1987). The Programmatic Agreement requires SHPO consultation is to be completed prior to approving expenditure of federal funds or prior to issuing any licenses or permits.

- a Class III (100 percent pedestrian) cultural resource inventory would be conducted to identify historic properties present in all areas proposed to be disturbed by a federal undertaking

- consultation with the SHPO when identifying and evaluating historic properties, in assessing effects upon them, and considering alternatives to avoid or reduce effects, and

- a treatment plan for all eligible National Register of Historic Places (NRHP) properties that cannot be avoided by development.

Undertaking is defined as any project, activity, or program that can result in changes in the character or use of historic properties.

Under all alternatives, excavation permits would be issued to qualified applicants for scientific or educational purposes. All excavation permit applications would have to conform to the Secretary of Interior's Standards and Guidelines. The Secretary's standards require that all excavation proposals clearly list the objectives of the research or the need for excavation. The Secretary's standards requires applicants to demonstrate that excavation of the resource would further archaeological knowledge, be in the public interest, and meet scientific and educational goals of the research/education proposals.

Excavation permits for the protection of archaeological data from cultural resources would also be issued to qualified applicants. Cultural resources subject to serious natural erosion or uncontrollable vandalism and resources that could not be avoided by proposed development activities or permanently preserved in situ under the control of the United States would be offered to qualified applicants. The following stipulations would be placed on all permits:

-Excavated or collected materials will be curated locally or within the state of Colorado whenever possible.

-Curation facilities will meet requirements of *36 CFR 79* (or must demonstrate diligence in working toward meeting the requirements)

Under all alternatives, special management consideration would be given to known cultural resource sites having high value or sensitivity. Table 2-61 lists known sites and proposed management of those sites. Additional high value or sensitive cultural sites would be recorded as they are identified.

Under Alternative C, the Texas-Missouri-Evacuation Creek area would be designated as an ACEC primarily to protect the cultural resources present.

Under Alternatives C and D, a protection plan would be developed for all cultural resources occurring on BLM lands within one-half mile of all designated roads and trails, county roads, and state highways. Protection plans for additional sites also would be developed as additional data and needs are identified.

Implementation

Under all alternatives, Section 106 compliance would be required before authorizing surface-disturbing activities.

Under Alternatives A, B, and C, individual activity plans would be prepared for cultural sites listed in Table 2-62. Under Alternative D, management of these cultural sites would be included in integrated activity plans (see Integrated Activity Plan Section, Chapter 1). The BLM also would develop individual activity plans for significant sites that are not located within integrated activity plan areas as additional data becomes available.

Table 2-61. Proposed Management for Selected Cultural Resource Sites

Location	Proposed Management Actions			
	Alternative A	Alternative B	Alternative C	Alternative D
Canyon Pintado National Historic District (16,040 acres, Map 2-19)	Revise boundaries to conform to standard legal descriptions.	Revise boundaries to conform to standard legal descriptions.	Revise boundaries to conform to standard legal descriptions. Develop cultural resources interpretive program in cooperation with recreation program. Identify as CSU area for surface disturbing activities. Identify as an avoidance area for major rights-of-way. Close to new mineral materials sales and permits. Monitor all new surface-disturbing activities within and outside of existing rights-of-way.	Revise boundaries to conform to standard legal descriptions. Develop cultural resources interpretive program in cooperation with recreation program. Identify as CSU use area for surface disturbing activities. Identify as avoidance area for major rights-of-way. Close to new mineral materials sales and permits. Monitor all new surface-disturbing activities within and outside of existing rights-of-way.
Duck Creek Wickiup Village (3 acres)	Identify as a no surface occupancy (NSO) area	Identify as a no surface occupancy (NSO) area	Contained within the Duck Creek ACEC. Identify as a NSO area. Develop a cultural resources interpretive program in cooperation with recreation program.	Contained within the Duck Creek ACEC. Identify as a NSO area. Develop a cultural resources interpretive program in cooperation with recreation program.

Table 2-61 continued

Location	Proposed Management Actions			
	Alternative A	Alternative B	Alternative C	Alternative D
Colorow wickiup site	Develop cultural resources interpretive program in cooperation with recreation program.	Develop a cultural resources interpretive program in cooperation with recreation program.	Develop a cultural resources interpretative program in cooperation with recreation program.	Develop a cultural resources interpretative program in cooperation with recreation program.
Rangely Special Recreation Management Area (410,800 acres)	N/A	Provide interpretation facilities and opportunities for scientific research.	Provide interpretative facilities and opportunities for scientific research.	Provide interpretative facilities and opportunities for scientific research.
Douglas/ Baxter Pass Designated Research Area (680,720 acres)	N/A	N/A	Continue to designate 680,720 acres north of Douglas/Baxter Passes as a cultural resource scientific research area. Continue the cooperative agreement with the Archaeological Research Institute for support of a field school.	Continue to designate 680,720 acres north of Douglas/Baxter Passes as a cultural resource scientific research area. Continue the cooperative agreement with the Archaeological Research Institute for support of a field school.
Texas-Missouri-Evacuation Creek Proposed ACEC (22,510 acres)	N/A	N/A	Designate as an ACEC. Develop a cultural resources interpretative program in cooperation with the Recreation Program. Designate as an avoidance area for rights-of-way. Apply a CSU restriction to proposed surface-disturbing activities (see Appendix B).	Apply a CSU restriction to proposed surface-disturbing activities (see Appendix B). Develop a cultural resources interpretative program in cooperation with the Recreation Program.
Moosehead Mountain Proposed ACEC (8,940 acres)	N/A	N/A	Develop a cultural resources interpretative program in cooperation with the recreation program.	Develop a cultural resources interpretative program in cooperation with the recreation program.
Dragon Trail	N/A	N/A	Develop a cultural resources interpretative program in cooperation with the recreation program.	Develop a cultural resources interpretative program in cooperation with the recreation program.
Dripping Rock Cave	N/A	N/A	Develop a cultural resources interpretative program in cooperation with the recreation program.	Develop a cultural resources interpretative program in cooperation with the recreation program.

PALEONTOLOGICAL RESOURCE MANAGEMENT

Management

The following geological formations would be classified as Class I paleontological survey areas: the Chinle, Glen Canyon, Morrison, Cedar Mountain, Mowry Shale, Parachute Creek Member of Green River, Wasatch, and Brown's Park formations. Also, in the Rangely area, the Mesaverde Group and Uinta formations. The remainder of the resource area would be classified as either Class II or Class III.

The following management would apply under all alternatives: Class I paleontological areas having good, safe outcrops likely to produce scientifically important fossils would be surface-surveyed. Surveys would not be conducted in Class I areas having vertical- to near-vertical (unsafe) slopes, areas of soil development, and areas covered with much vegetation as these areas are unlikely to produce recoverable fossils.

Class II geologic units would be sample-surveyed for paleontological resources during large-scale ground-disturbing activities. Up to 5 percent of potentially-disturbed Class II areas would be inventoried for the following surface-disturbing activities: (1) large-scale pipelines (longer than 10 miles) and any surface-disturbing activity, project, or land exchange of greater than 100 acres.

Best management practices listed in Appendix A for paleontological resources would be used to write conditions of approval (COAs). COAs would be attached to all land use authorizations issued where fossils are likely to occur. Federal undertakings, as defined in *36 CFR 800*, would be reviewed, on a case-by-case basis, for impacts to paleontological resources.

Paleontologists wishing to act as third party consultants would be required to obtain appropriate permits for inventory, site recordation, and site excavation on BLM lands. They also would have to obtain permits on private surface/federal minerals and private surface whenever a federal undertaking would be involved.

Separate permits for inventory, site recordation, and excavation of fossil resources are issued under the authority of the *Federal Land Policy and Management Act of 1976* (FLPMA). Permits are issued only to reputable paleontologists, museums, or universities, as defined in *43 CFR Parts 3 and 7*, and only for scientific/educational purposes. Guidelines published at *43 CFR 7.6* would be used for paleontologists except that paleontological training rather than archaeological training would be required. To be permitted, applicants would need to show that the proposed work would further paleontological knowledge in the public interest and the resource identified for study/use would be best suited to meet identified scientific and educational goals of research/education proposals.

Permits would be required for paleontological work in special management areas such as areas of critical environmental concern (ACECs), research natural areas (RNAs), world heritage sites, or national register of historic places (NRHP) districts or sites. Applicants wishing to collect common invertebrate fossils that might also encounter vertebrate fossils or fossils of scientific interest also would need to have a valid permit.

Organizations that conduct tours and charge fees to escort people out to fossil sites for collection would need to obtain the same kind of special recreation permits under FLPMA as outfitters and guides. NEPA analysis would be required for operations that would create large-sized or large numbers of holes or that would remove large rock faces.

Permits also might be issued for the protection of paleontological data. Paleontological resources subject to serious natural erosion or uncontrollable vandalism and resources that could not be avoided by proposed development activities or be permanently preserved in situ under the control of the United States would be offered to qualified applicants. The following stipulations would be placed on the permit:

> -Excavated materials will be curated locally or within the state of Colorado.
>
> -Curation facilities will meet the requirements of *36 CFR 79* (or must show diligence in working toward those standards).

Under Alternatives C and D, special management consideration would be given to three paleontological sites listed in Table 2-62. Two sites, Black's Gulch and Coal Draw, would be designated as ACECs primarily because of their paleontological values (see ACEC section, this chapter).

Implementation

Under all alternatives, a qualified paleontologist would make a significance determination for any fossils found during surveys in Class I or II areas or during project implementation. Significant fossils would be protected by either removing (or heavily sampling) the fossils or moving the project to another location.

Under Alternatives A, B, and C, individual activity plans would be prepared for paleontological localities listed in Table 2-62. Under Alternative D, management of these paleontological localities would be included in integrated activity plans (see Integrated Activity Plan Section, Chapter 1). Significant fossil sites not located within integrated activity plan areas could have individual activity plans prepared as further data becomes available.

Table 2-62. Proposed Management of Selected Paleontological Sites

Site	Proposed Management			
	Alt A	Alt B	Alternative C	Alternative D
Raven Ridge ACEC Proposed Addition (2,890 Acres)	N/A	N/A	Designate as a proposed addition to existing Raven Ridge ACEC. Develop a paleontological resources interpretive program in cooperation with the recreation program. Available for oil and gas leasing with a no surface occupancy stipulation. Withdrawn from mineral entry. Closed to mineral material sales. Exclusion area for public utilities.	Designate as proposed addition to existing Raven Ridge ACEC. Develop a paleontological resources interpretive program in cooperation with the recreation program. Available for oil and gas leasing with a no surface occupancy stipulation. Withdrawn from mineral entry. Closed to mineral material sales. Exclusion area for public utilities.
Black's Gulch Proposed ACEC (800 Acres)	N/A	N/A	Designate as ACEC. Develop a paleontological resources interpretive program in cooperation with the recreation program. Available for oil and gas leasing with a no surface occupancy stipulation. Closed to mineral material sales. Avoidance area for public utilities.	Designate as ACEC. Develop a paleontological resources interpretive program in cooperation with the recreation program. Available for oil and gas leasing with a no surface occupancy stipulation. Closed to mineral material sales. Avoidance area for public utilities.
Coal Draw Proposed ACEC (1,840 Acres)	N/A	N/A	Designate as ACEC. Develop a paleontological resources interpretive program in cooperation with the recreation program. Available for oil and gas leasing with a no surface occupancy stipulation. Closed to mineral material sales. Avoidance area for public utilities.	Designate as ACEC. Develop a paleontological resources interpretive program in cooperation with the recreation program. Available for oil and gas leasing with a no surface occupancy stipulation. Closed to mineral material sales. Avoidance area for public utilities.

LAND USE AUTHORIZATIONS MANAGEMENT

Management

For the purposes of granting land use authorizations, certain BLM lands would be classified as avoidance, exclusion, or open areas. Right-of-way corridors would be identified under Alternatives A, B, and D. Table 2-63 lists the areas, by alternative, included as avoidance and exclusion and Table 2-64 lists acres within each classification by alternative.

Table 2-63. Exclusion and Avoidance Areas for Land Use Authorizations

Concern or Location	Alternative A	Alternative B	Alternative C	Alternative D
Avoidance Areas				
Soils (NSO Stips 01, 02, 03)	7,200	N/A	827,000	35,700
Raptor nests (NSO Stips 04, 05, 06, 07, 08, 09,10)	8,170	31,250	31,250	31,250
Sage grouse leks (NSO Stips 11,12,13)	1,300	5,490	5,490	5,490
Important watering areas (NSO Stip 14)	810	N/A	N/A	N/A
Bald eagle roost/concentration areas (NSO Stips 15, 16)	N/A	830	830	830
Colorado River Cutthroat trout (NSO Stip 17)	4,560	N/A	N/A	N/A
Active beaver colonies (NSO Stip 18)	420	N/A	N/A	N/A
ACECs (NSO Stips 19, 21)	6,330	14,210	102,950	80,440
BLM sensitive plants/RVAs (NSO Stip 28)	4,520	4,520	4,520	4,520
Harper's Corner Road (CSU-	2,530	2,530	2,530	2,530
Oak Ridge State Wildlife Area (NSO Stip 28)	N/A	N/A	9,300	9,300
Riparian areas	940	970	970	970
Canyon Pintado National Register site	N/A	N/A	16,040	16,040
Exclusion Areas				
ACECS (NSO Stips 20, 22)	2,410	3,420	18,680	18,680
Duck Creek wickiup site (NSO Stip 23)	3	3	N/A	N/A
Known habitat - listed/candidate plants (NSO Stips 24, 25)	1,440	1,440	1,440	1,440
Potential habitat - listed/candidate plants (NSO Stip 25)	N/A	45,400	45,400	45,400
Moosehead Road Closure	N/A	6,260	N/A	N/A
WSAs recommended for wilderness designation[1/]	41,250	41,250	41,250	41,250

[1/] Acreage includes only those WSAs recommended for wilderness designation assuming they will be designated. However, all WSAs (81,190 acres) and additional land outside the WSAs recommended for wilderness designation (2,000 acres) are and will remain exclusion areas for rights-of-ways until Congress releases them from wilderness consideration. WSAs released will become avoidance areas.

Table 2-64. Land Use Classification Areas by Alternative

Classification	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Exclusion	45,110	97,770	106,770	106,770
Avoidance	36,770	69,080	1,000,860	187,050
Open[1/]	1,038,060	1,062,050	348,270	935,080
Designated ROW Corridors	335,960[2/]	227,000	0	227,000

[1/] Figure may be artificially low due to overlapping areas in other categories.
[2/] This is the acreage of existing major corridors.

Under Alternative A, the existing major utility corridors (Map 2-22 at the end of the chapter) would continue to be designated. Under Alternatives B and D, corridors for the siting of future, major linear rights-of-way would be designated, and/or undesignated, as specified in Table 2-65 and as shown on Map 2-23 (at the end of the chapter). These designations would be based on topography, soils, existing and proposed areas with special designations, threatened and endangered species habitats, relative percentages of public versus private ownership, industry input (e.g. the 1992 edition of the Western Regional Corridor Study), and the degree to which a potential corridor is currently occupied.

Facilities for which these corridors are designated would not be required to avoid any specifically identified avoidance areas that the corridor crosses. However, proper provisions for the protection of those resource values which cause an area to be identified as an avoidance area would be required.

Table 2-65. Corridors for Major Rights-of-Way and Recommended Action

Name	Action	Remarks
Rifle-Meeker	Eliminate as a designated corridor	This is an occupied corridor, identified in the Western Regional Corridor Study (WRCS), which crosses mostly private property.
Roan	Eliminate as a designated corridor.	This is a partially occupied corridor, not identified in the WRCS, which crosses mostly private property.
Joe Bush	Eliminate as a designated corridor.	This is a short, occupied corridor, which is not identified in the WRCS, and does not appear to provide a logical tie or route for potential future facilities.
Flag Creek-Rifle Creek	Eliminate as a designated corridor.	This is an occupied corridor, not identified in the WRCS, which crosses mostly private property.
Bonanza-Loma	Eliminate as a designated corridor: replace with the Dragon Trail-Atchee Ridge Corridor.	This is an occupied corridor, a variation of which is identified in the WRCS (based on an abandoned proposal), which crosses an area of high soil instability, that is prone to landslides.
Little Horse-Bonanza	Modify/replace with the Park Canyon-Magnolia Corridor.	This is an occupied corridor which is identified in the WRCS. It is heavily congested in places, particularly in Little Horse Draw.
Rangely-Loma	Eliminate as a designated corridor; replace with the Dragon Trail-Atchee Ridge Corridor.	This is a heavily occupied corridor that is identified in the WRCS. It crosses Canyon Pintado National Historic District.
Rangely-Loma A (Douglas Pass)	Eliminate as a designated corridor; replace with the Dragon Trail-Atchee Ridge Corridor.	This is an occupied corridor, that is identified in the WRCS. It crosses an area of high soil instability that is prone to landslides.
Rangely-Loma B (West Creek)	Eliminate as a designated corridor; replace with the Dragon Trail-Atchee Ridge Corridor.	This is an occupied corridor, not identified in the WRCS. It ties into the Rangely-Loma Corridor; approximately ½ of the land crossed is private.
East Douglas	Eliminate as a designated corridor; replace with the Dragon Trail-Atchee Ridge Corridor.	This is an occupied corridor, not identified in the WRCS. It ties into the Rangely-Loma Corridor; approximately ½ of the land crossed private.
Douglas Pass-Roan	Eliminate as a designated corridor.	This is an occupied corridor, not identified in the WRCS. It is only designated for access road uses, which is the current use. It ties into the Black Sulphur Corridor.

Table 2-65 continued

Name	Action	Remarks
Red Rock Trail	Eliminate as a designated corridor.	This is a short, occupied corridor, not identified in the WRCS, and does not appear to provide a logical tie or route for potential future facilities.
Burma-Roan	Eliminate as a designated corridor.	This is a short, occupied corridor, not identified in the WRCS, and does not appear to provide a logical tie or route for potential future facilities.
Tommy's Draw	Eliminate as a designated corridor; replace with the Park Canyon-Magnolia Corridor.	This is a short, occupied corridor, not identified in the WRCS. It is approximately 2 miles south to and parallel to the route of two major pipelines. This latter route is identified in the WRCS.
Colony	Eliminate as a designated corridor.	This is a short, occupied corridor, not identified in the WRCS. It is an extension of the La Sal Corridor, and is located entirely on private land.
Cathedral Bluffs	Eliminate as a designated corridor.	This is an occupied corridor, not identified in the WRCS. Approximately 80% of the land crossed is private.
La Sal	Modify/replace with segments of the Highway 64-Ryan Gulch, Park Canyon-Magnolia, and Collins South Corridors.	This is an unoccupied corridor, except of the extreme southern end. It is not identified in the WRCS.
Black Sulphur	Eliminate as a designated corridor; replace with the Park Canyon-Magnolia Corridor.	This is a partially occupied corridor, not identified in the WRCS. It parallels major facilities, ranging form 3 to 10 miles to the north. These latter facilities are identified in the WRCS.
Calamity Ridge	Modify/replace with the High-way 64-Ryan Gulch Corridor.	This is an occupied corridor, not identified in the WRCS.
Cottonwood Draw	Eliminate as a designated corridor; replace with the Highway 64-Ryan Gulch Corridor	This is a short, occupied corridor, not identified in the WRCS. It is an extension of the Calamity Ridge Corridor that does not appear to provide a logical tie or route for potential future facilities.
Bar D-Blair Mesa	Eliminate as a designated corridor.	This is an unoccupied corridor, not identified in the WRCS. It does not appear to provide a logical tie route for potential future facilities.
White River City Rio Blanco	Modify/replace with segments of the Price Creek-Greasewood and Magnolia-Rifle Corridors.	This is a partially occupied corridor, segments of which are identified in the WRCS.
Little Hills	Modify/replace with the Powell Park-Magnolia Corridor.	This is an occupied corridor, that may be identified in the WRCS.
Collins Gulch	Modify/replace with the Collins Gulch South Corridor.	This is an occupied corridor, not identified in the WRCS. It is essentially a segment of the La Sal Corridor.
Kendall Point	Eliminate as a designated corridor.	This is an occupied corridor that may be identified in the WRCS. It does not appear to provide a logical tie or route for potential future facilities.
Dinosaur-Cross Mountain-Craig	Modify/replace with the Elk Springs-Dinosaur Corridor.	This is an occupied corridor, a segment of which is identified in the WRCS. This corridor ties into a designated corridor in Utah.
Rangely-Blue Mountain	Eliminate as a designated corridor.	This is an occupied corridor, not identified in the WRCS. The nearby Nate Springs Draw Corridor provides a suitable alternative.

Table 2-65 continued

Name	Action	Remarks
Vernal-Rangely	Modify/replace with the Rangely-Vernal Corridor.	This is an occupied corridor that is identified in the WRCS. It presently may pass through T&E plant habitat, which would be avoided by the Rangely-Vernal Corridor.
Blue Mountain-Bonanza(old)	Modify/replace with the new Blue Mountain-Bonanza Corridor	This is an unoccupied corridor, not identified in the WRCS. It runs approximately 2 miles southeast of, and parallel to the WAPA Craig to Bonanza 345 kv powerline.
Rangely-Meeker A	Modify/replace with the Meeker-Rangely Corridor	This is an occupied corridor, a portion of which is identified in the WRCS.
Rangely-Meeker B	Modify/replace with the Meeker Rangely Corridor	This is an occupied corridor that is identified in the WRCS.
Wolf Creek-Elk Springs	Eliminate as a designated corridor.	This is an occupied corridor, not identified in the WRCS. Although future expansion of existing may become necessary, this can occur as a modification of prior existing rights, and no trans-area facilities would be anticipated.
Nate Springs Draw	Carry over as a designated corridor ("Nate Springs") suitable for all forms of linear facilities.	This is a short, occupied corridor, not identified in the WRCS. It provides a link from the Dinosaur-Cross Mountain-Craig Corridor to the Rangely Field. This corridor would be approximately 1 mile wide.
White River City-Elk Springs	Eliminate as a designated corridor.	This is an unoccupied corridor, not identified in the WRCS. It does not appear to provide a logical tie or route for potential future facilities.
White River City-Price Creek	Modify/replace with the Price Creek-Greasewood Corridor	This is an occupied corridor that is identified in the WRCS. A fairly high percentage of the land crossed by the north end of this corridor is private.
Meeker-Axial-Craig	Modify/replace with the Meeker North Corridor	This is a short, occupied corridor that is identified in the WRCS. A high percentage of the land crossed by this corridor is private.
Sulphur Creek	Eliminate as a designated corridor.	This a short, occupied corridor that is identified the WRCS. Most of the land crossed/served by this corridor is private.
Red Wash	Eliminate as a designated corridor.	This is a short, unoccupied corridor that is not identified in the WRCS. It does not appear to provide a logical tie or route for potential future facilities; suitable alternative routes exist.
Meeker-Cross Mountain	Eliminate as a designated corridor.	This corridor is located in the Little Snake Resource Area, and crosses mostly private lands.
Elk Springs-Dinosaur	Designate as a corridor, suitable for all forms of linear facilities.	This corridor would be approximately 2 miles wide, and would run from Elk Springs, to the State Line.
Blue Mountain-Bonanza (new)	Designate as a corridor, suitable for all forms of linear facilities.	This corridor would follow the WAPA Craig to Bonanza 345 kv powerline. It would be approximately 2 miles wide.
Rangely-Vernal	Designate as a corridor, suitable for all forms of linear facilities.	This corridor would run northwesterly from Rangely to the State line. It would be approximately 2 miles wide, and would parallel State Highway 64.
Dragon Trail-Atchee Ridge	Designate as a new corridor, suitable for buried linear facilities.	This corridor would follow the route proposed for Rangely Loop segment of the Northwest Pipeline Company Expansion Project. It would be approximately 1 mile wide. It would replace corridors which cross areas with unstable soils.

Table 2-65 continued

Name	Action	Remarks
Meeker-Rangely	Designate as a corridor, suitable for all forms of linear facilities.	This corridor would run south of, and parallel to the White River/State Highway 64. It would be approximately 1 mile wide.
Highway 64-Ryan Gulch	Designate as a corridor, suitable for buried linear facilities.	This corridor would run south from State Highway 64, along Rio Blanco County Road 122, to Rio Blanco County Road 24X and 24. It would be approximately 1 mile wide.
Collins Gulch South	Designate as a corridor, suitable for buried linear facilities	This corridor would run south from Magnolia Camp It would be approximately 1 mile wide.
Magnolia-Rifle	Designate as a corridor, suitable for buried linear facilities.	This corridor would run southeasterly from Magnolia Camp to the head of West Rifle Creek, along State Highway 13. It would be approximately 1 mile wide.
Price Creek-Greasewood	Designate as a corridor, suitable for buried linear facilities.	This corridor would run north from Magnolia Camp, to Price Creek. It would be approximately 1 mile wide.
Powell Park-Magnolia	Designate as a corridor, suitable for buried linear facilities.	This corridor would run north from Magnolia Camp, then turn northeast into the west end of Powell Park. It would be approximately 1 mile wide.
Meeker North	Designate as a corridor, suitable for all forms of linear facilities.	This corridor would run north from the east end of Powell Park. It would be approximately 1 mile wide.

Under Alternative C, corridors for major rights-of-way would not be designated. Existing corridors would be dropped and would not be replaced.

For Alternatives B, C, and D, where a corridor would no longer be designated, authorized facilities located in that corridor would be considered prior existing rights. These facilities would be renewed as long as the facility remains in use, in compliance with the terms and conditions of the grant .

Under Alternatives A and B, communication site rights-of-way would be limited to currently occupied sites. An exception would be granted if the existing site could not meet the applicant's needs. Exceptions would not be granted under Alternatives C and D. Rights-of-way for communications facilities would be limited to existing sites, and the site at Moosehead Mountain would not be available for any additional uses.

Under all alternatives, applications for land use authorizations (e.g. rights-of-way, leases, and permits) would be considered on a case-by-case basis. Necessary NEPA documentation would be prepared for all such actions. Actions proposed in open areas, and in designated corridors would normally be authorized subject to the use of best management practices (see Appendix A), all applicable surface use stipulations listed in Appendix B, and any site specific stipulations identified through the NEPA process. Development would be allowed in avoidance areas under the same conditions, only where no feasible alternative could be identified.

Under all alternatives, land use authorizations would be denied in exclusion areas, with the exception of short-term land use permits involving no development, and projects that are consistent with management objectives for the area. Under all alternatives, unauthorized uses of the public lands would be eliminated or, properly authorized. In all cases, the BLM would recover monetary considerations and ensure adequate rehabilitation of the public lands.

Implementation

Avoidance areas, exclusion areas, and designated corridors would become effective upon signature of the approved RMP and record of decision. Necessary NEPA documentation would be prepared for all applications. Applicants would be encouraged to make early contacts for all planned actions, in order to identify preferred routes and potential conflicts.

Corridors for the siting of future, major linear rights-of-way would be designated, and/or undesignated, as specified in Table 2-65. Facilities for which these corridors are designated would not be required to avoid any specifically identified avoidance areas that the corridor crosses. However, proper provisions for the protection of those resource values that cause an area to be identified as an avoidance area would be required. In those instances where a corridor would no longer be designated, authorized facilities located in that corridor would be considered prior existing rights. These facilities would be renewed as long as the facility remains in use in compliance with the terms and conditions of the grant. . Designated corridors would be "fine tuned" as integrated activity plans are prepared.

LAND TENURE ADJUSTMENTS

Management

Under all alternatives, BLM lands that meet public sale criteria under Section 203 of the *Federal Land Policy and Management Act* (FLPMA) would be identified for disposal by sale, exchange, or other means. These lands are referred to as Category 1 lands. Category 1 lands are listed in Table I-1, Appendix I.

Under all alternatives, BLM lands not specifically identified for disposal or retention would be considered Category 2 lands. These lands would be available for disposal, on a conditional and case-by-case basis, through boundary adjustment, state indemnity selection, Recreation and Public Purposes Act applications, or other appropriate statutory authority. Disposals would not be made under Section 203 of *FLPMA*, the *Desert Land Act*, or the *General Allotment Act*. Proposals would be evaluated based on the criteria identified in Appendix I. Land disposal or exchanges would be considered when the result would be consolidated ownership, improved management of natural resources, or serving the public interest consistent with the provisions of Section 206 of FLPMA. Specific Category 2 tracts for disposal or exchange have not been identified in Appendix I.

Under all alternatives, certain BLM lands such as wilderness study areas (WSAs) and areas of critical environmental concern (ACECs) would be identified for retention. These lands are referred to as Category 3 lands. Category 3 lands would not be available for disposal under any circumstances. These lands are listed in Table I-2, Appendix I.

Under all alternatives, public access rights would be reserved on all disposal tracts controlling access to BLM lands. Exchanges involving oil shale lands would be allowed where the public interest would be well served, BLM's criteria for Fee Exchange Policy and Leasable and Saleable Minerals would be met, and an equal value determination could be made (see analysis in Appendix I).

Map 2-24 shows Category 1 disposal tracts and Category 3 Retention lands for Alternative D only. Table 2-66 shows, by alternative, the total acres of land placed in Categories 1, 2, and 3.

Table 2-66. Land Ownership Adjustments

Category	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Category 1 (Lands identified as suitable for Disposal by Sale under Sec. 203 or Other Means)	19,800[1/]	9,600	9,600	5,770
Category 2 (Lands available for Disposal by means other than sale under Sec. 203)	1,174,100	949,900	839,730	1,317,310
Category 3 (Lands Identified for Retention)[2/]	262,000	496,400	606,570	136,780

[1/]Those Category 1 and 2 lands lying within the Piceance Basin would not be available for exchange.
[2/]Under all alternatives, the WSAs would be retention lands. For purposes of analysis, it was assumed Bull Canyon, Skull Creek, and Willow Creek will be designated as wilderness and Black Mountain, Windy Gulch, and Oil Spring Mountain will be released.

Under all alternatives, BLM could acquire private lands through exchange, purchase or donation. The acquisition of certain state or private lands would be pursued by means other than exchange (purchase or donation) where the acquisition would serve to enhance the BLM's objectives and special emphasis programs. Such acquisitions would generally be limited to inholdings within designated areas.

Fourteen factors, listed in Appendix I, would be considered in evaluating acquisitions through exchange, purchase, or donation.

Implementation

Category 1 Lands. Proposals from private land owners and other government agencies to buy or exchange BLM lands identified as Category 1 disposal lands would be considered. An environmental assessment or other appropriate NEPA documentation would be prepared for all such proposals. BLM would not acquire private lands near Category 1 lands.

Category 2 Lands. BLM would consider proposals to exchange Category 2 lands for private or state lands. Appropriate NEPA documentation would be prepared for all such proposals. Application under the *Recreation and Public Purpose Act* or *Airport and Airways Act* would be considered on a case-by-case basis. Applications under Section 203 of *FLPMA*, the *Desert Land Act*, or the *General Allotment Act of 1887* would be rejected. Boundary adjustments or exchanges with other Federal agencies also would be considered on a case-by-case basis.

Category 3 Lands. Proposals to purchase or exchange BLM lands identified as Category 3 would be denied. BLM could pursue purchase of private lands near Category 3 lands or could consider exchanging Category 1 or Category 2 BLM lands for such private lands.

ACCESS MANAGEMENT

Management

Under all alternatives, public and administrative access would be pursued in areas of BLM lands having high resource values with limited or no public or administrative access. Administrative and public access would be obtained through acquisition of easements, acquisition of land through exchanges, road construction or renovation, or by other appropriate means.

Table 2-67 lists broad areas, by alternative, where enhanced access is desirable. Map 2-25 shows broad areas under Alternative D where (1) public access needs to be enhanced, (2) administrative access is needed, or (3) both public and administrative access is needed.

Table 2-67. Areas and Roads Identified for Legal Access

Area/Road	Justification	Alternative A	Alternative B	Alternative C	Alternative D
Miller Creek	Wilderness	Public	Administrative	Administrative	Public
Jones Twist	Wilderness	Public	None	None	Public
West Twin Wash	Wilderness	Public	None	None	Public
Pudding Ridge/Upper Toms	Recreation	Public	Public	Public	Public
Segar/Joe Bush/Timber	Recreation	Public	Public	Public*	Public*
Fourteen Mile Ridge	Recreation	Public	None	None	None
Gray Hills	Recreation	Public	Public	Public	Public
Danforth Hills	Recreation	Public	Public	Public	Public
Davis Gulch	Recreation	Public	Public	Public	Public
Little Duck Creek	Recreation	Public	Public	Public	Public
Citadel	Recreation	Public	Public	None	Public
Buckwater Draw	Wilderness	Public	Public	None	Public

Table 2-67 continued

Area/Road	Justification	Alternative A	Alternative B	Alternative C	Alternative D
Turner Creek (Blue Mountain/ Roundtop)	Recreation, Range	Public	Administrative	None	None
Baxter Pass (Baxter-Douglas)	Recreation, Minerals, Range	Public	Public	Administrative	Public
Little Burma Road	Recreation, Minerals	Public	Public	Administrative	Public
Cathedral/Soldier/ Lake Complex	Recreation	Public	Public	Administrative	Public
Lion Canyon/Sulphur Creek	Recreation	None	Public	Public*	Public*
Thornburg Mountain	Recreation	None	Public	Public	Public
West Fork Spring Creek	Recreation, Wilderness	None	Public	Administrative	Public
North Skull Creek	Recreation, Wilderness	None	Public	Public	Public
Divide Creek (North)	Recreation, Wilderness	None	Public	Public	Public
Angora	Recreation, Range	None	Public	Public	Public
Cottonwood	Recreation, Range	None	Public	Public	Public
Dripping Rock	Recreation, Range	None	Public	Public	Public
Fishery in Bitter Creek, West Fawn Creek and Clear Creek	Recreation, Fisheries	None	Public	Public*	Public*
South White River (near Utah)	Recreation, Minerals	None	Public	Administrative	Public
Stedman Mesa (North)	Recreation, Minerals	None	Public	Administrative	Public
Park Canyon	Minerals, Range	None	Public	Administrative	Administrative
East Evacuation Creek	Recreation	None	Public	Administrative	Administrative
Puckett Gulch	Range, Fire	Public	Administrative	None	Administrative
Scandard/Sorghum	Recreation	None	Public	Public	Public
Twin Gulches	Recreation	None	Public	Public	Public
Windy Gulch	Recreation, WSA	None	Public	Public	Public

Table 2-67 continued

Area/Road	Justification	Alternative A	Alternative B	Alternative C	Alternative D
Smith Gulch	Recreation, WSA	None	Public	Public	Public
Colorow Mountain	Recreation	None	Public	Public	Public
Blair Mesa	Recreation	None	Public	Public	Public
East Skull Creek Rim	Recreation	None	Public	Public	Public
South Hogback	Recreation	None	Public	Public*	Public*
Upper Cow Creek	Recreation	None	Public	Public*	Public*
Thirteen Mile	Recreation	None	Public	Public	Public
Lower Whiskey Creek	Recreation, Minerals, Range	None	Public	Administrative	Public
Tommy's Draw	Recreation, Range	None	Public	Administrative	None
Divide Creek (South)	Recreation, Fisheries	None	Public	Administrative	Public
Douglas Pass to Square S Summer	Range, Recreation, Minerals	None	Public	Administrative	Public
Box Elder Creek	Wildlife	None	Administrative	Administrative	Administrative
Winter Valley (Rain Guage Site)	Hydrology	None	Administrative	Administrative	Administrative
Buckwater Ridge/Meadow Creek	Recreation, Wilderness	None	Public	Administrative	Public
White River City - Rio Blanco County 66	Recreation, Wildlife	None	Public	Administrative	Public
Gilsonite	Range, Minerals	None	Administrative	Administrative	Administrative
Red Rock	Recreation, Minerals	None	Administrative	Administrative	Administrative
Big/Little Foundation	Recreation, Minerals	None	Administrative	Administrative	Administrative
East Douglas Feeders	Recreation, Minerals	None	Administrative	Administrative	Administrative
Razorback Ridge	Recreation, Minerals	None	Administrative	Administrative	Administrative
Trail Canyon	Range, Recreation	None	Public	Administrative	Public

Table 2-67 continued

Area/Road	Justification	Alternative A	Alternative B	Alternative C	Alternative D
Calvert	Range	None	Administrative	Administrative	Administrative
Clarkson	Range	None	Administrative	Administrative	Administrative

*Foot and horseback only.

Lands identified for public access enhancement include (1) large blocks of inaccessible BLM lands or lands with currently limited/restricted public access, (2) smaller blocks of high demand or high interest BLM lands, and (3) lands that would tie major open routes together. The type and degree of access acquired would be consistent with the management direction for or emphasis of the area to be accessed.

Implementation

Under all alternatives, priorities for acquiring access would be identified for all areas needing access. Under all alternatives access plans would be developed to identify specific tracts of land or roads needed for public or administrative access. Under Alternative D, access plans would be written as part of integrated activity plans (see Chapter 1, Integrated Activity Plans Section), where possible. All access plans would include necessary NEPA documentation.

The type of access and specific restrictions on such access would be determined through development of the access plan or integrated activity plan.

WITHDRAWALS MANAGEMENT

Management

Existing Withdrawals. Under all alternatives, recommendations would be made for the revocation of all BLM public land withdrawals which are no longer needed. Recommendations would also be made for continuation of withdrawals which are still needed for the purposes for which the original withdrawal was made. These recommendations are shown on Table 2-68.

BLM lands withdrawn and managed by other agencies, which may at some future time be returned to BLM management will be reviewed at that time. Appropriate recommendations will be made based on a determination of the lands suitability for return.

Proposed Withdrawals. Under Alternatives B, C, and D, additional withdrawals would be made to protect sensitive resources listed in Table 2-68. Map 2-26 shows locations of all existing and proposed withdrawals except for *Classification and Multiple Use Act*.

Implementation. Recommendations for continuation, revocation, or application would be made pursuant to *43 CFR 2310*, or BLM Manual 2355, as appropriate.

Table 2-68. Existing and Proposed Withdrawals and Water Reserves

Type of Withdrawal	Recommendation							
	Alternative A	BLM Acres	Alternative B	BLM Acres	Alternative C	BLM Acres	Alternative D	BLM Acres
Existing Withdrawals								
Oil shale withdrawal(PLO1 4522)	Do not revoke or modify	625,400	Do not revoke. Modify language to allow for exchanges and other discretionary actions needed to implement RMP.	625,400	Same as Alternative B	625,400	Same as Alternative B	625,400
Coal withdrawals of 1910	Do not revoke or modify	366,570	Revoke	0	Same as Alternative B	0	Same as Alternative B	0
Classification and Multiple Use Act (C-1018)	Do not revoke or modify	2,340	Revoke	0	Same as Alternative B	0	Same as Alternative B	0
Public Water Reserves	Do not revoke. Continue all public water reserves	5,480	Do not revoke. Continue all public water reserves.	5,480	Same as Alternative B	5,480	Same as Alternative B	5,480
Water power withdrawals	Continue; identify as suitable for restricted management of WRR.	3,620	Continue; identify as suitable for restricted management of WRR.	3,620	Same as Alternative B	3,620	Same as Alternative B	3,620
Total Existing		1,003,410		634,500		634,500		634,500
Proposed Withdrawals								
Special Status Withdrawals:								
a. Inside existing oil shale withdrawal	None necessary. Protected by oil shale withdrawal.	0	Withdraw known and potential T/E habitat. Oil shale withdrawal revoked.	42,460	None necessary. Protected by oil shale withdrawal.	0	None necessary. Protected by oil shale withdrawal.	0
b. Outside existing oil shale withdrawal (Raven Ridge ACEC)	None proposed	0	Withdraw entire Raven Ridge designated ACEC.	2,090	Withdraw entire Raven Ridge proposed and designated ACECs.	4,980	Withdraw entire Raven Ridge proposed and designated ACECs.	4,980

Table 2-68 continued

Type of Withdrawal	Recommendation							
	Alternative A	BLM Acres	Alternative B	BLM Acres	Alternative C	BLM Acres	Alternative D	BLM Acres
Moosehead Road Closure Area	No existing withdrawal. None proposed.	0	No existing withdrawal. None proposed.	0	Withdraw Moosehead Road Closure Area	6,260	No existing withdrawal. None proposed.	0
Oak Ridge State Wildlife Area	Partially within an existing coal withdrawal. No new withdrawals proposed.	0	Partially within an existing coal withdrawal. No new withdrawals proposed.	0	Withdraw Oak Ridge State Wildlife Area	9,300	Partially within an existing coal withdrawal. No new withdrawals proposed.	0
NRHP Site (Canyon Pintado)	Partially within an existing coal withdrawal. No new withdrawals proposed.	0	Partially within an existing coal withdrawal. No new withdrawals proposed.	0	Withdraw Canyon Pintado NRHP district	16,040	Withdraw Canyon Pintado NRHP district	16,040
Total Proposed	--	0	--	44,550	--	36,580	--	21,020
Total Existing and Proposed	--	1,003,410	--	679,050	--	671,080	--	655,520

WATERPOWER AND RESERVOIR RESOURCES MANAGEMENT

Management

All lands in the planning area which are determined by professional engineering evaluation to have potential for waterpower and reservoir resources development are assigned to one of three categories: (1) lands suitable for intensive management of waterpower and reservoir resources sites, (2) lands suitable for restricted management of waterpower and reservoir resources sites, and (3) lands which are unsuitable for management as waterpower and reservoir resources sites.

Under all alternatives, those lands withdrawn as waterpower and reservoir resource sites will be managed as sites suitable for restricted management.

Implementation

Professional engineering evaluation of all waterpower and reservoir sites would be reviewed, and recommendations would be made to modify, continue, or revoke the withdrawal affecting the site. Under all alternatives, eligible waterpower and reservoir sites would be protected from adverse effects to the value of the site.

FIRE MANAGEMENT

Management

All naturally-ignited and human-caused fires in the resource area would be managed under a conditional suppression strategy. Response would range from immediate and aggressive suppression when protecting life or property, or both, to daily monitoring of burns when fire is satisfying specific predetermined resource objectives. The intensity of fire suppression activity would not be fixed and would vary with the conditions occurring at the time of fire start. Included in the conditional suppression area would be delineated zones of specific resource objectives, such as habitat enhancement, vegetative manipulation, or target acreage ceilings on individual burns. These areas are delineated on Maps 2-27 and 2-29 (at the end of the chapter).

For purposes of analysis, based on past occurrence, it is projected that wildfires will burn about 30,620 acres over the next 20 years (Table 2-69).

Table 2-69. Wildfire Projections Over the Next 20 Years

Geographical Reference Area	Acres
Blue Mountain/Moosehead	600
Wolf Creek/Red Wash	1,500
Crooked Wash/Deep Channel	1,800
Danforth/Jensen	360
Piceance	15,000
Douglas/Cathedral	11,400
Total	30,620

Alternative A. Under Alternative A, Canyon Pintado Historical District, and sage grouse winter habitat would be protected. Two sage grouse nesting/brooding areas would have a target acreage ceiling of 200 acres per individual burn. Map 2-27 illustrates suppression areas, and Table 2-70 shows the number of acres within each fire management area.

Alternatives B, C, and D. Under Alternatives B, C, and D, cultural sites, oil and gas development and wildlife/riparian habitat would be protected. A Prescribed Natural Fire (PNF) area would be identified, for Alternatives B, C, and D, in east Piceance Basin. Map 2-28 illustrates suppression and natural fire areas and Table 2-71 lists the acreage and specific objectives for each fire management area.

Management Restrictions. The following constraints would be applied to all fire management areas under Alternatives B, C, and D:

- Firelines would be placed outside existing riparian areas on both intermittent and free-flowing streams. On streams without riparian habitat, the firelines would not be constructed across the stream. Blackline would be used as firelines.

- Firelines would be rehabilitated to the satisfaction of a resource advisor in order to prevent gully formation and runoff collection and to discourage

animal trailing. Rehabilitation would include water barring, the placement of woody material on the fireline, seeding and recontouring. Refer to Best Management Practices in Appendix A.

- Areas within riparian zones that have been completely burned with an intense fire, would be reseeded to achieve vegetation objectives as identified in the vegetation section.

- Stream crossing locations would be limited to existing roads and trails.

- Burns in fragile soil and watershed areas (see Soils and Water sections, this chapter) would be reseeded with grass mixtures identified in Appendix A (Best Management Practices).

- The use of heavy equipment for fireline construction would be implemented only upon approval by the area manager. Prior to fire suppression in Canyon Pintado Historical District or the Texas Creek/Evacuation Creek cultural area, the archaeologist would be consulted concerning handline construction or base camp location.

Implementation

The existing fire management plan would be updated and used in fighting fires under Alternative A. For Alternatives B, C or D, a new fire management activity plan and environmental assessment would be written following approval of the RMP. This plan would be integrated with the BLM planning process through the RMP and would address all aspects of the fire management program. The fire management activity plan would use initial attack analysis (IAA) to assist fire managers in fire budgeting by identifying costs plus resource net value changes.

A PNF plan would be developed in accordance with the outline in BLM Manual 9214. The plan would detail the prescription for burning, specific burning objectives, and parameters to allow fire to burn naturally.

Specific operational guidance for all fire training, presuppression, and suppression activities would be provided for in an operational plan. Operational plans would establish specific activity prescriptions needed to meet RMP objectives with the work force, equipment, and budget identified in the fire management activity plan.

Under all alternatives, resource advisors would be consulted to make suppression decisions and to assist in establishing site-specific rehabilitation requirements. For prescribed burn activities, smoke management requirements of BLM Manual 7723 would have to be followed to ensure smoke is minimized. This procedure would require obtaining an approved open burning permit from the State of Colorado prior to implementation.

Under Alternative D, integrated activity plans would identify areas and conditions where prescribed natural fire would be managed to achieve resource objectives. Prescriptions would be prepared for these areas, and natural burning would be managed within prescription; burns outside the prescription would be suppressed as a wildfire. Prescribed burn plans, including NEPA documentation, would be prepared and approved for specific vegetative manipulation or fuel reduction objectives.

Table 2-70. Fire Management Areas and Objectives under Alternative A

Fire Management Area	Acres	Resource of Concern/Specific Objective
Canyon Pintado Historic District	16,040	Protect archaeological and historical values, especially rock art
Sage grouse winter habitat	66,450	Protect upland sagebrush stands for winter sage grouse use.
Evacuation/Oil Springs Mountain	5,760	Protect archaeological and historical values.
Sage grouse nesting	79,480	Limit individual burns to 200 acres to protect nesting and brood habitats
All other	1,288,170	Level of suppression would vary with the conditions occurring at the time of the fire start.

Table 2-71. Fire Management Objectives under Alternatives B, C, and D

Fire Management Area	Acres	Resource of Concern/Specific Objective
Canyon Pintado Historical District	16,040	Protect archaeological and historical values, especially rock art.
Cultural/Historical	240,260	Protect archaeological and historical values
Oil and Gas Development	170,500	Protect oil and gas development.
White River Floodplain	8,500	Protect mature cottonwoods as suitable roost, perch, and nest substrate for bald eagles.
Beefsteak Riparian	890	Protect hawthorne, alder, buffaloberry, gambel oak and Rocky Mountain juniper.
Lower Wolf Creek/Red Wash/Dripping Rock Creek	51,930	Protect upland sagebrush stands for winter sage grouse use.
Greasewood/Little Spring Creek	22,250	Protect pinyon-juniper in deer winter range.
Blue Mountain/Crooked Wash/White River	96,800	Limit individual burns in sagebrush habitats to 200 acres.
East Piceance Prescribed Natural Fire Area	182,990	Allow naturally-occurring fires to burn within specific parameters to achieve multi-resource objectives.
Other	848,730	Level of suppression would vary with the conditions occurring at the time of fire start and predicted 5-day weather and fire behavior.

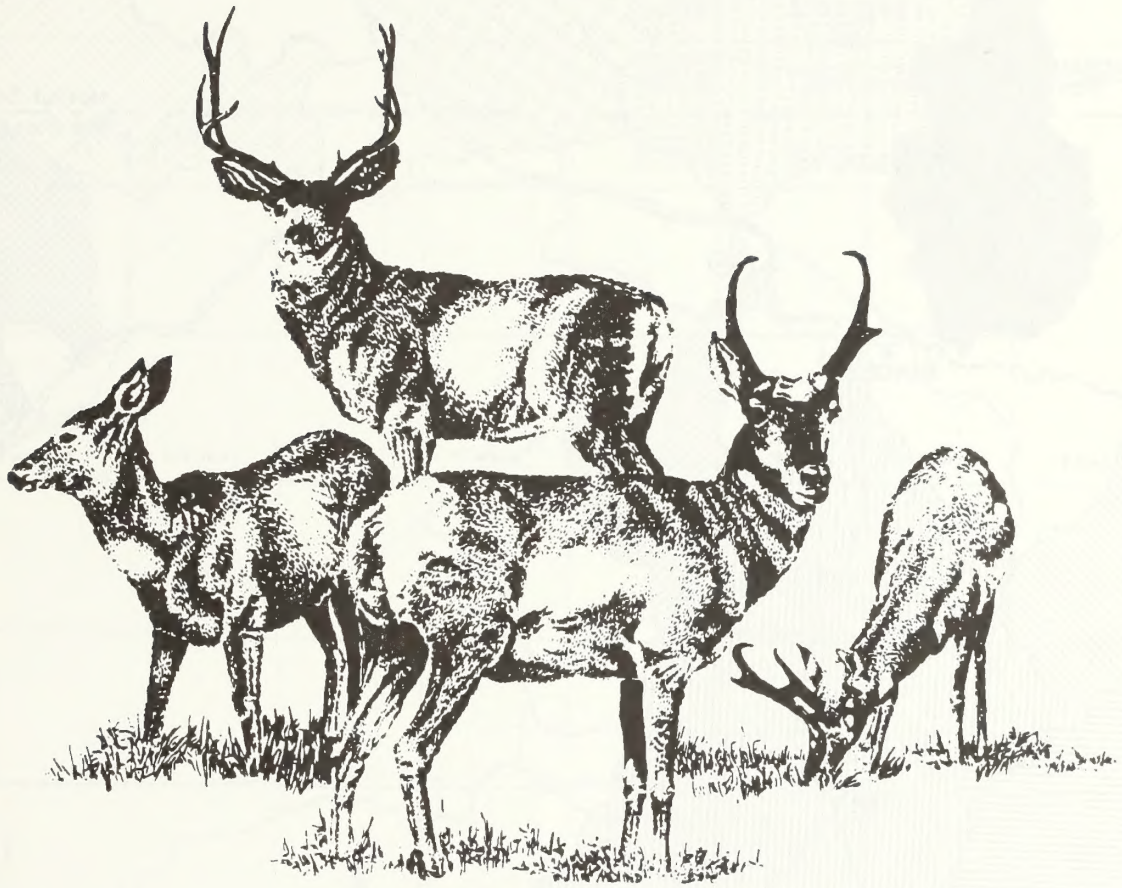
ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Eight alternatives were initially considered for this RMP. Of the eight alternatives, four were rejected following early scoping as not being reasonable. The four rejected alternatives are (1) Maximum Natural Resource Protection Alternative, (2) Maximum Commodity Production Alternative, (3) Increased Budget Alternative, and (4) Decreased Budget Alternative.

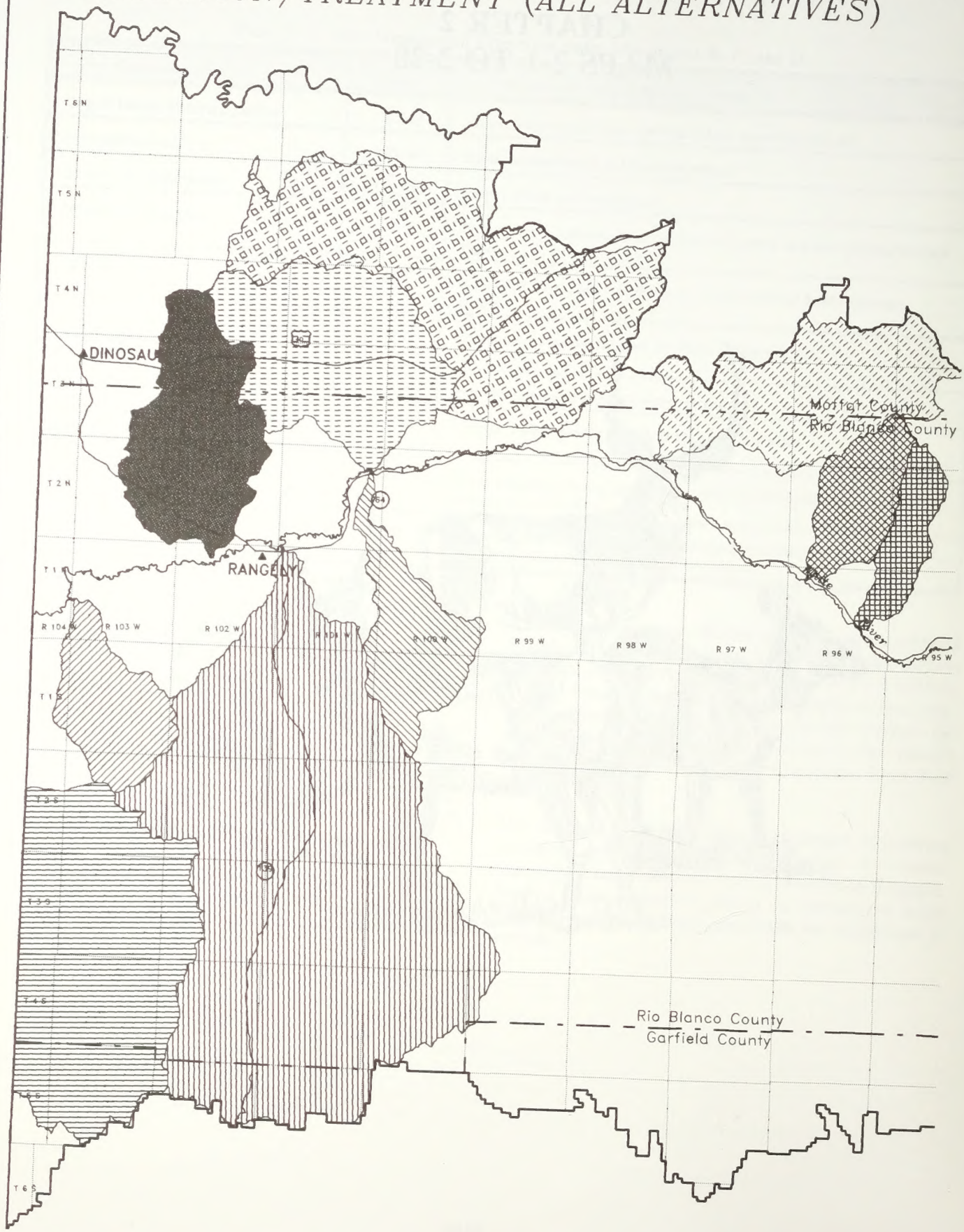
The Maximum Natural Resource Protection and Maximum Commodity Production Alternatives were the extremes of the spectrum where little or no constraints were considered in these two alternatives. Neither alternative was considered feasible or realistic. Both were considered to be in violation of the *Federal Land Policy and Management Act* (FLPMA). FLPMA mandates that resources be managed on a multiple-use sustained-yield basis in a manner that protects the quality of the environment and that recognizes the Nation's need for domestic sources of natural resources from BLM lands.

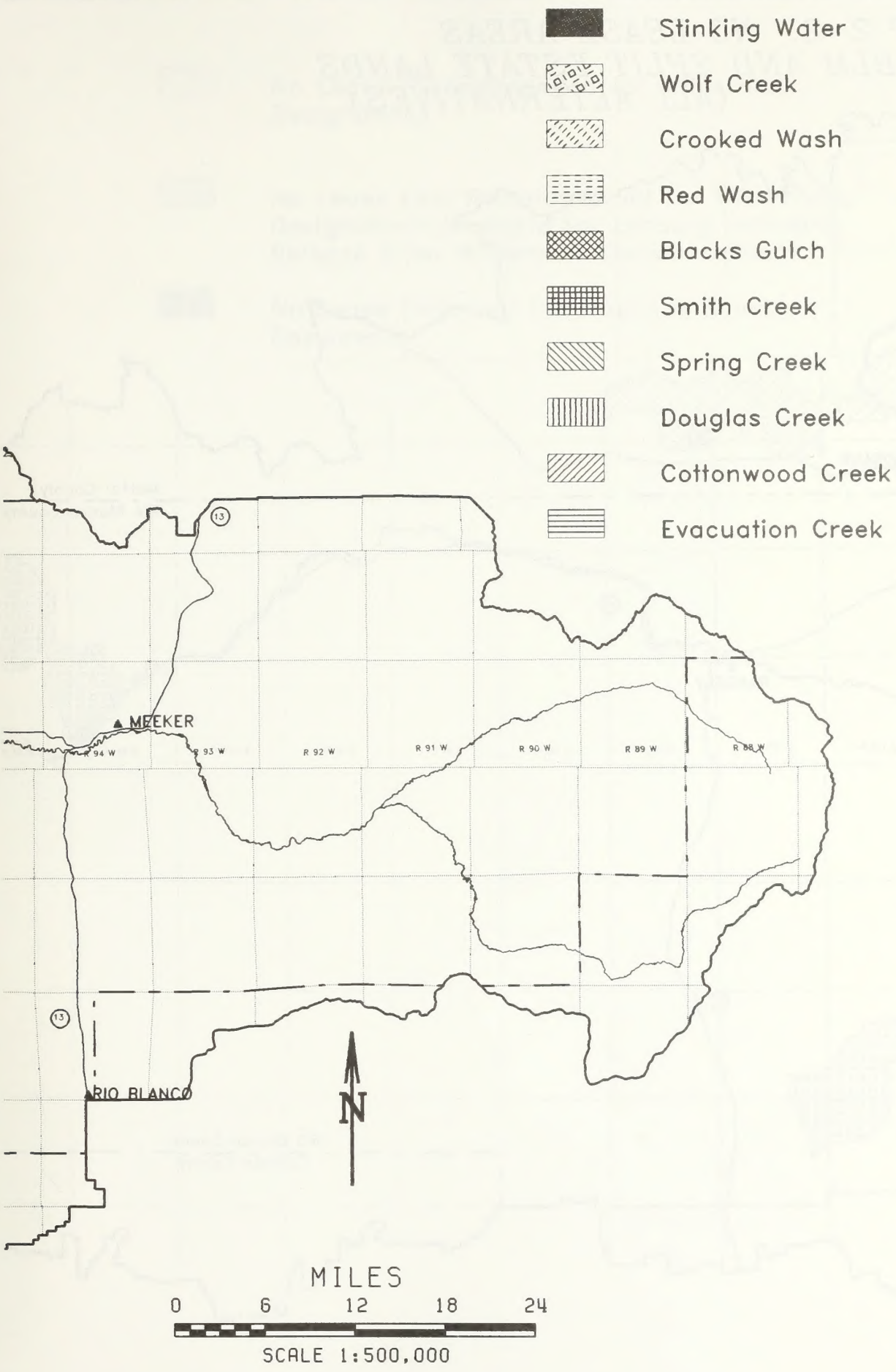
The Increased Budget and Decreased Budget Alternatives considered both higher and lower levels of resource management based on yearly funding provided by Congress. Because these alternatives depend on forecasts of future funding levels, they were considered too conjectural to analyze.

CHAPTER 2
MAPS 2-1 TO 2-28



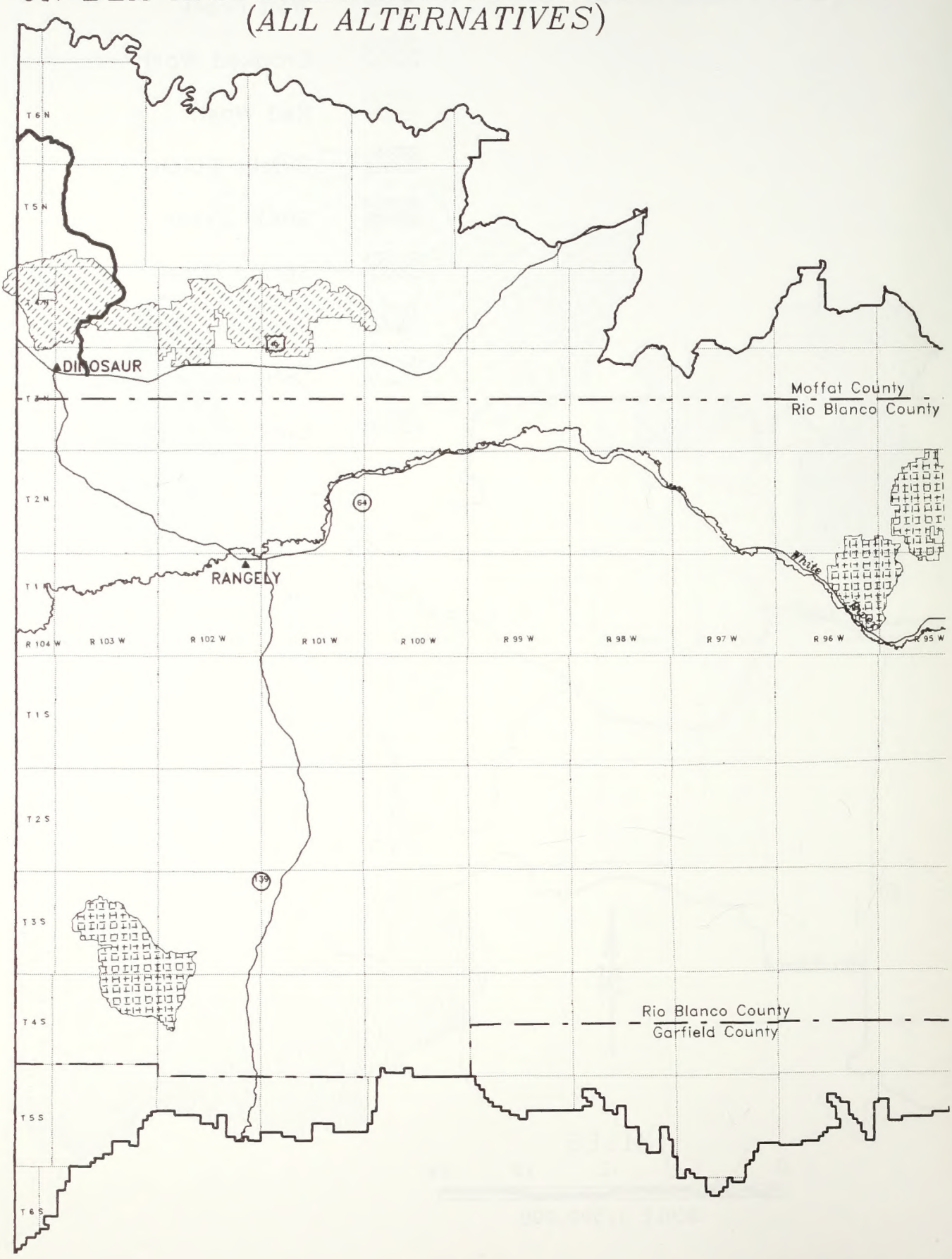
MAP 2-1. FRAGILE WATERSHEDS IDENTIFIED FOR PROTECTION/TREATMENT (ALL ALTERNATIVES)




Stinking Water
Wolf Creek
Crooked Wash
Red Wash
Blacks Gulch
Smith Creek
Spring Creek
Douglas Creek
Cottonwood Creek
Evacuation Creek
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-1

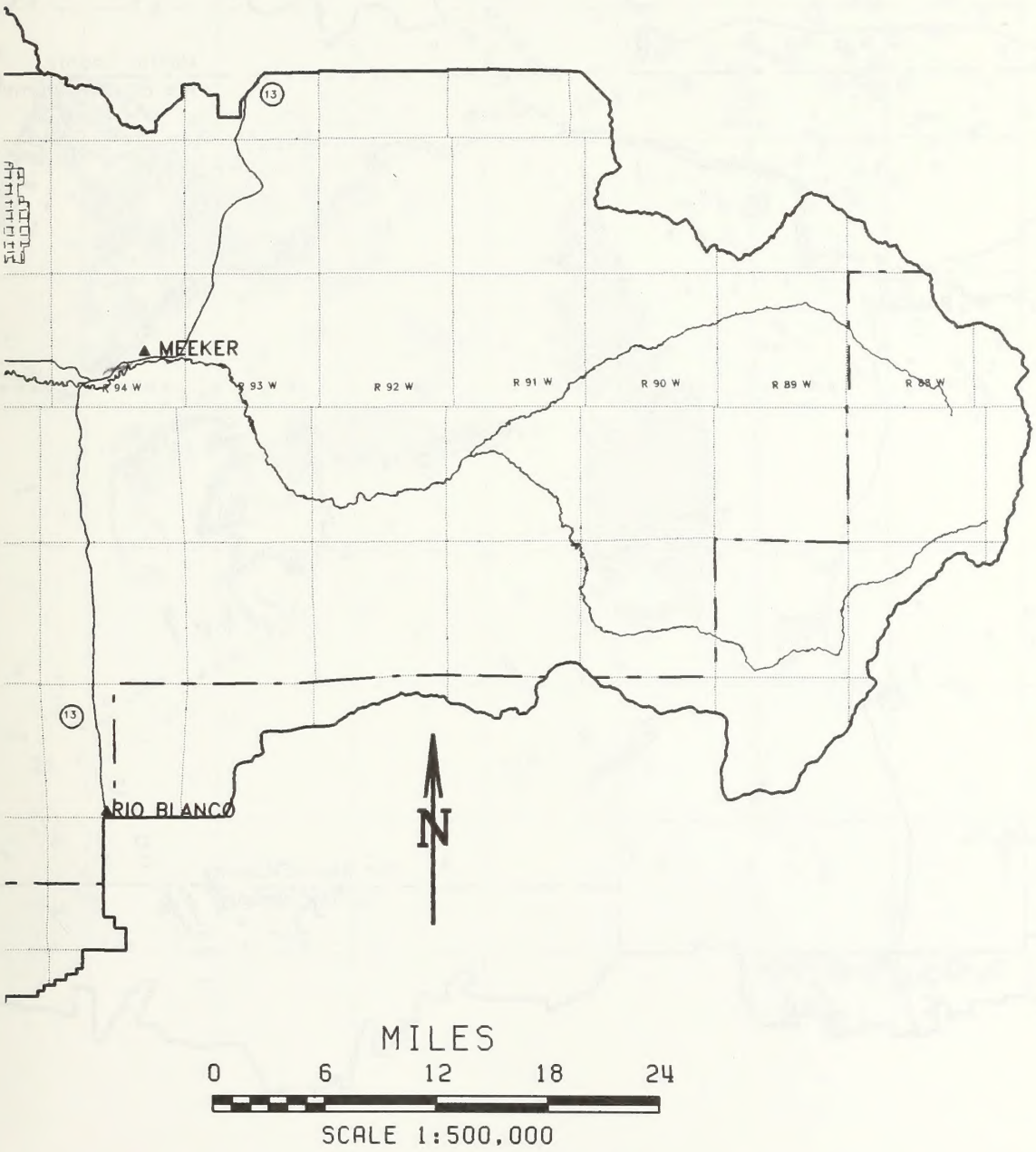
MAP 2-2. NO LEASE AREAS ON BLM AND SPLIT ESTATE LANDS (ALL ALTERNATIVES)



No Lease (Recommended for Wilderness Designation)

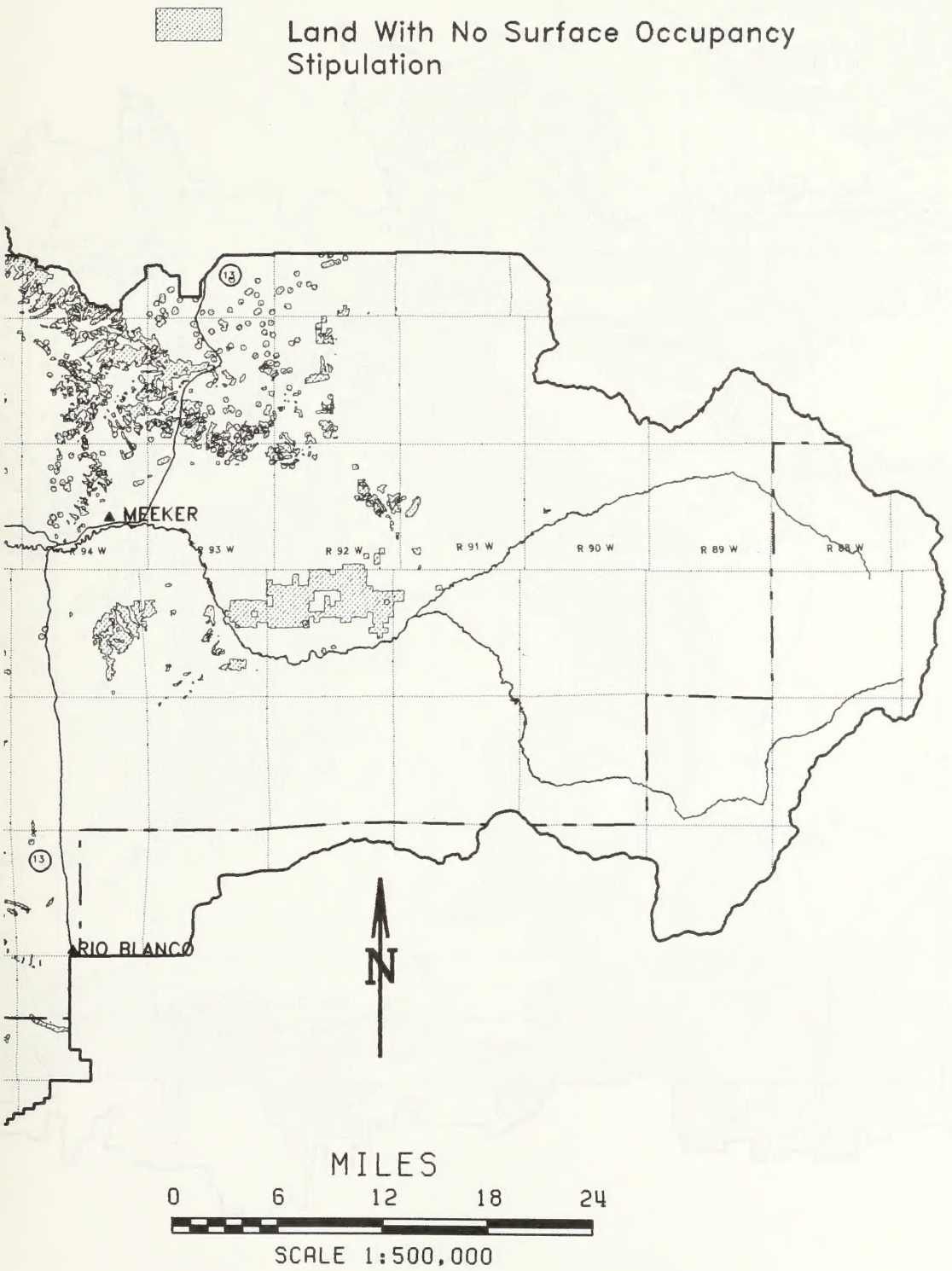
No Lease (Not Recommended for Wilderness Designation—Available for Leasing Following Release from Wilderness Consideration)

No Lease (National Park Service Scenic Easement)



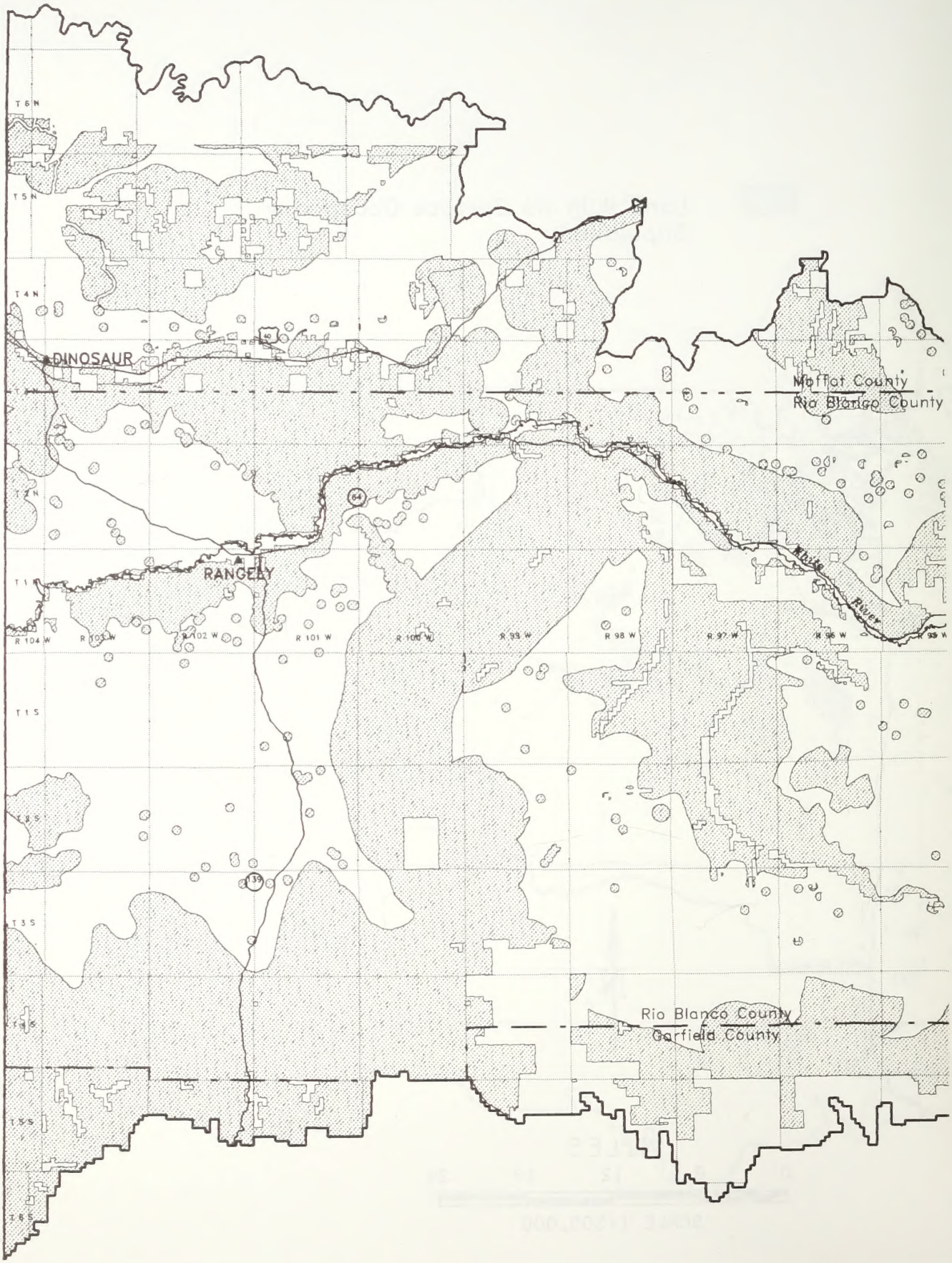
MAP 2-2

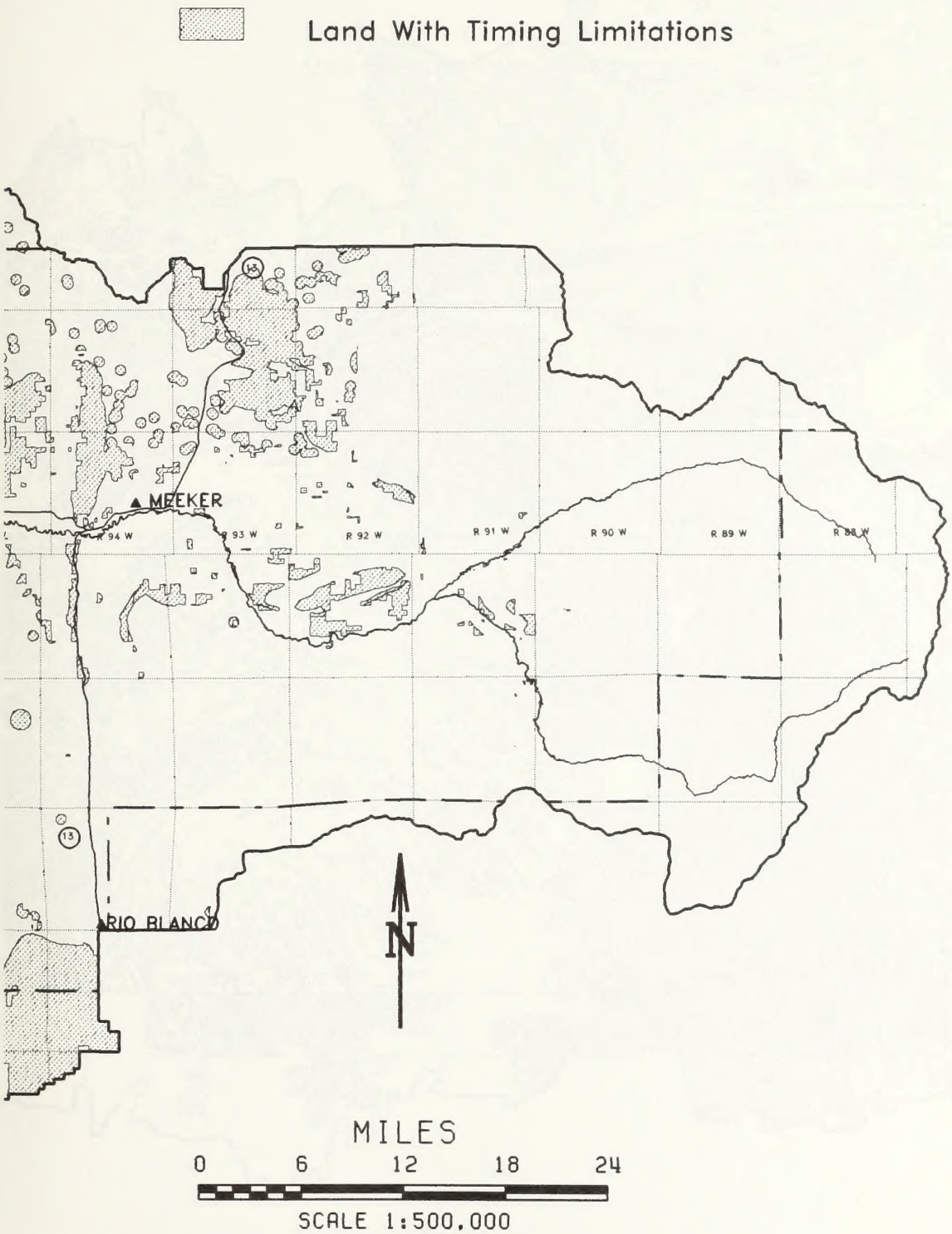
MAP 2–3. NO SURFACE OCCUPANCY STIPULATIONS ON BLM AND SPLIT ESTATE LANDS (ALTERNATIVE D)


Land With No Surface Occupancy Stipulation
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-3

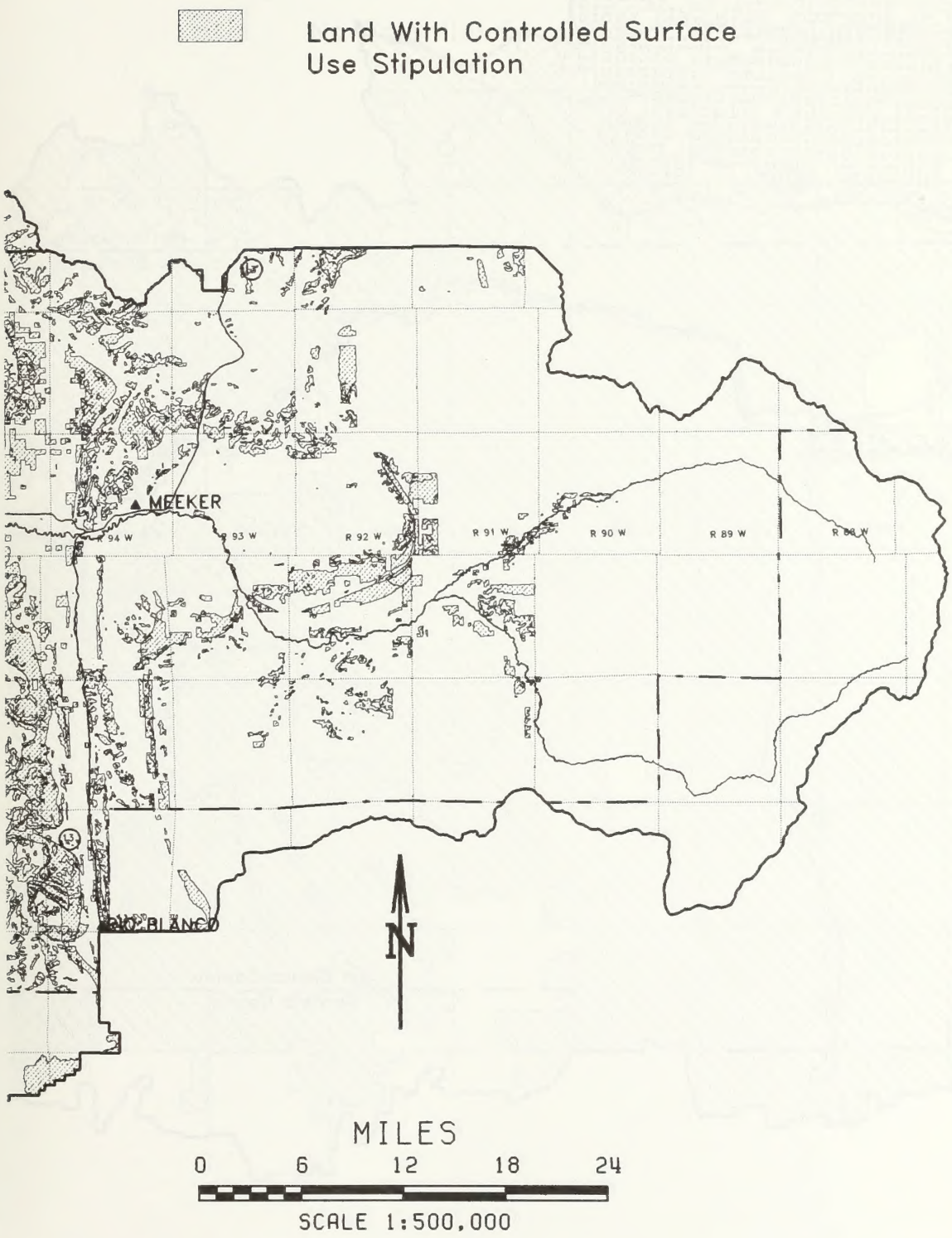
MAP 2-4. TIMING LIMITATIONS ON BLM AND SPLIT ESTATE LANDS (ALTERNATIVE D)



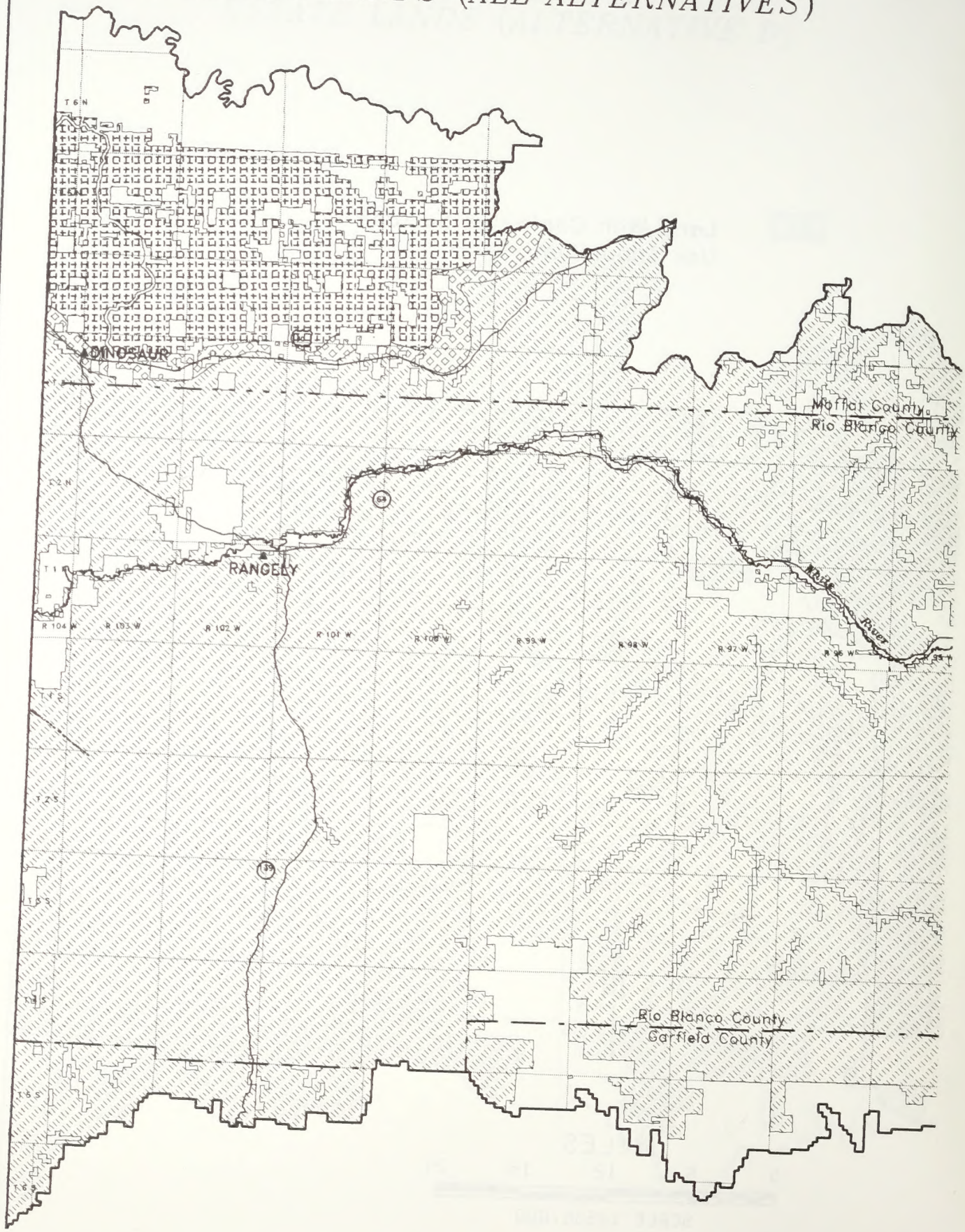

Land With Timing Limitations
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
N
MILES
0
6
12
18
24
SCALE 1:500,000

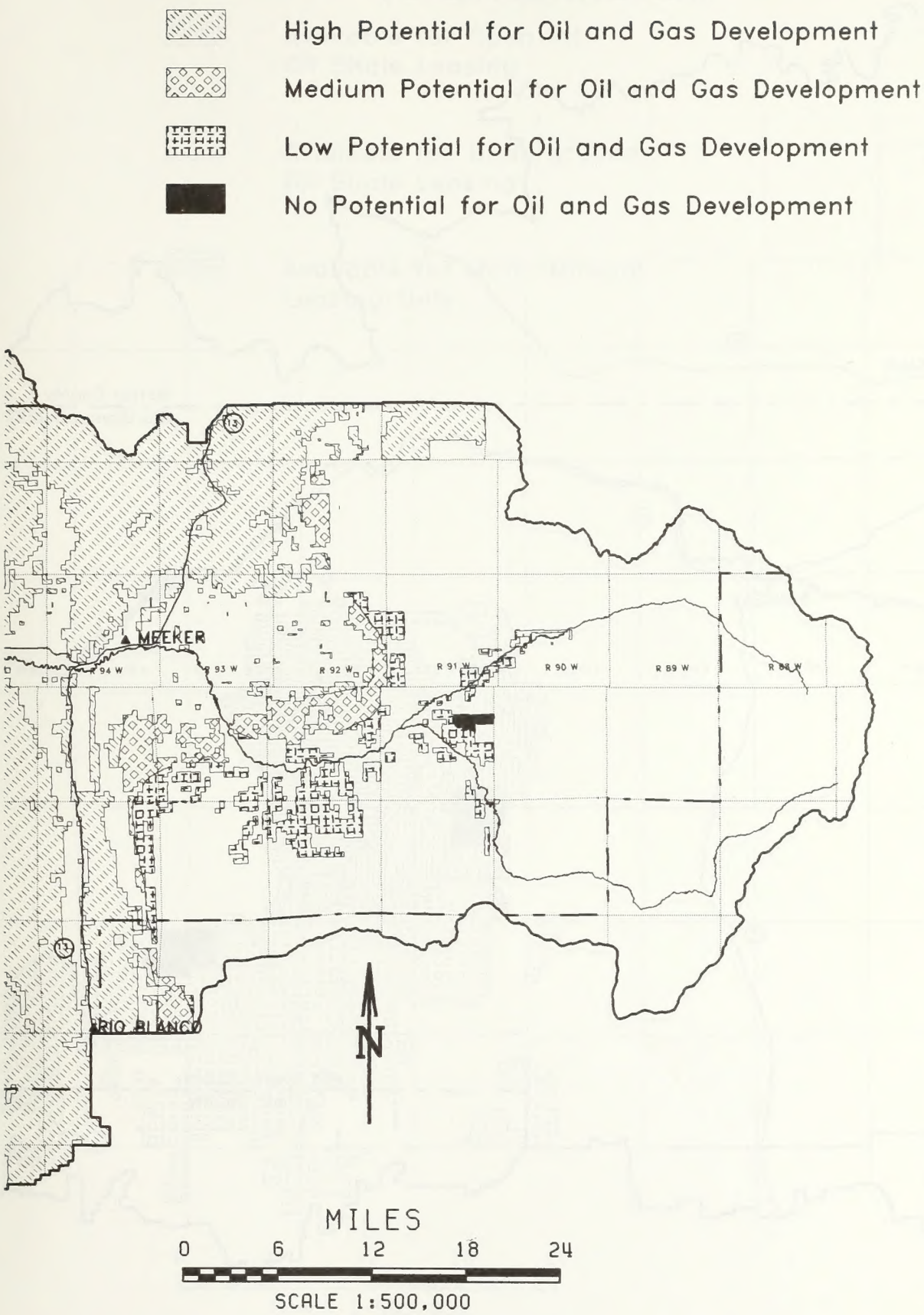
MAP 2-

MAP 2–5. CONTROLLED SURFACE USE STIPULATIONS ON BLM AND SPLIT ESTATE LANDS (ALTERNATIVE D)


Land With Controlled Surface Use Stipulation
MEEKER
94 W
93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

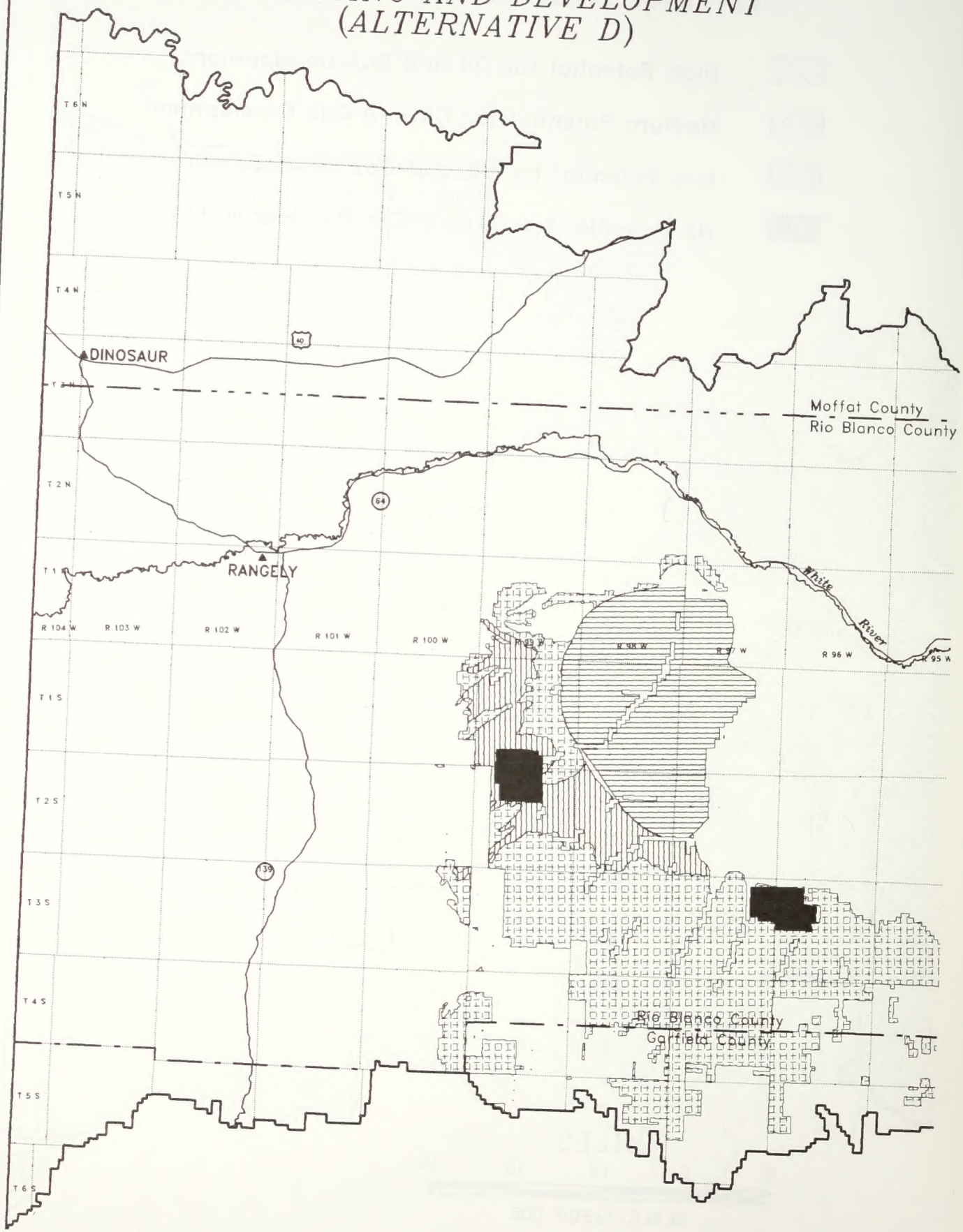
MAP 2–6. OIL AND GAS POTENTIAL ON BLM AND SPLIT ESTATE LANDS (ALL ALTERNATIVES)




High Potential for Oil and Gas Development
Medium Potential for Oil and Gas Development
Low Potential for Oil and Gas Development
No Potential for Oil and Gas Development
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
N
MILES
0 6 12 18 24
SCALE 1:500,000

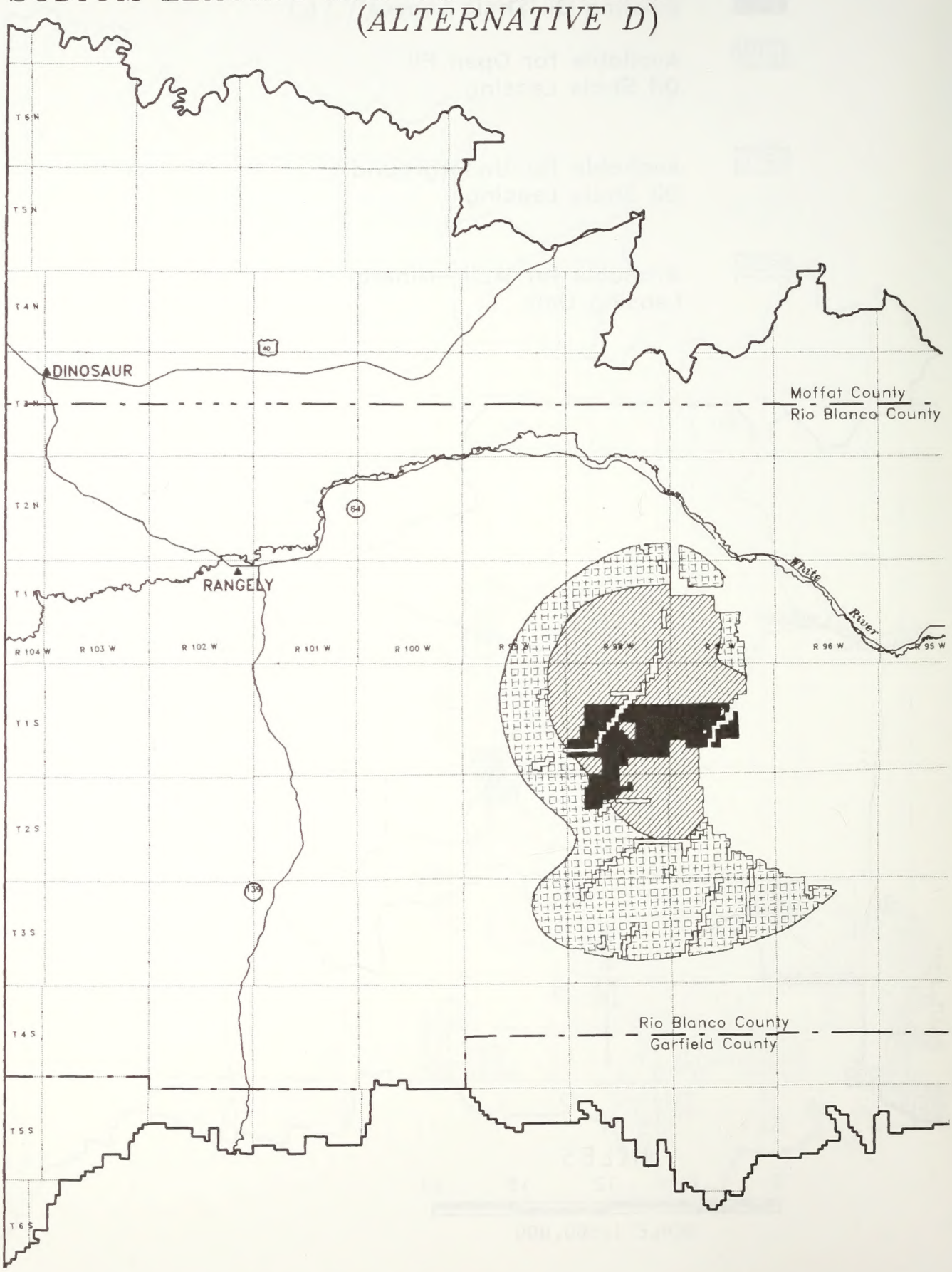
MAP 2-

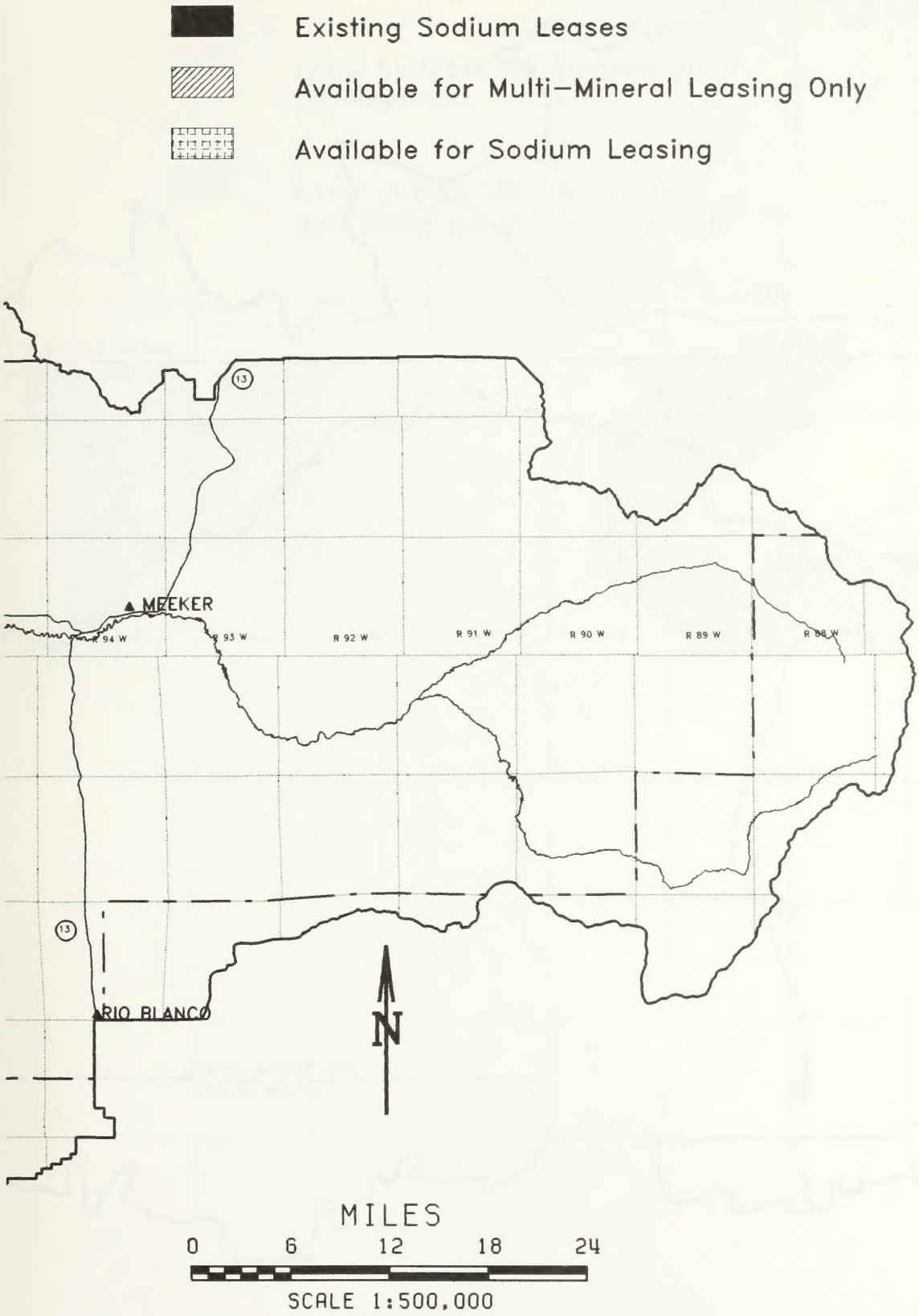
MAP 2-7. LANDS AVAILABLE FOR OIL SHALE LEASING AND DEVELOPMENT (ALTERNATIVE D)



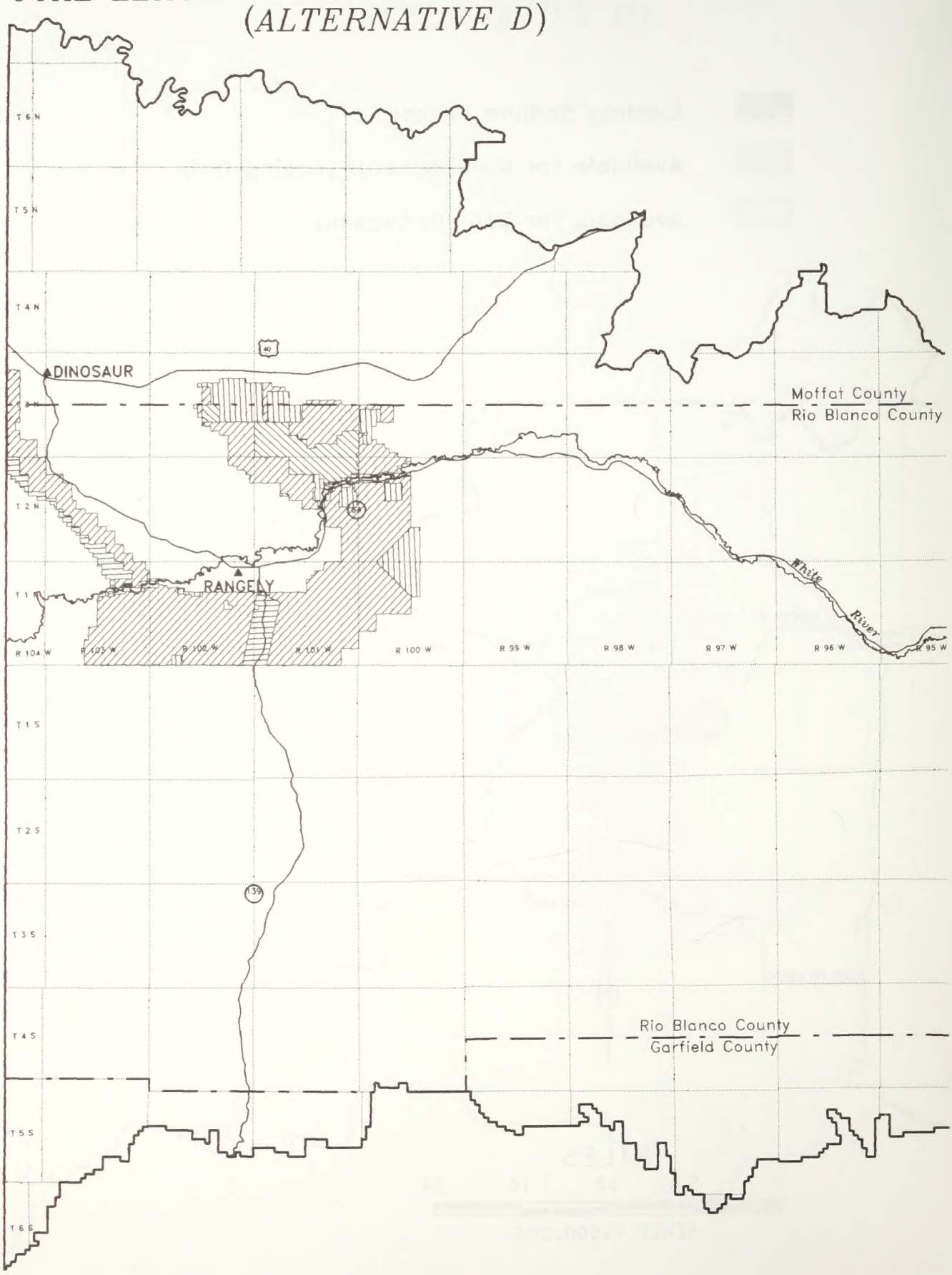
Existing Oil Shale Leases
Available for Open Pit Oil Shale Leasing
Available for Underground Oil Shale Leasing
Available for Multi–Mineral Leasing Only
MEEKER
RIO BLANCO
13
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
N
MILES
0 6 12 18 24
SCALE 1:500,000

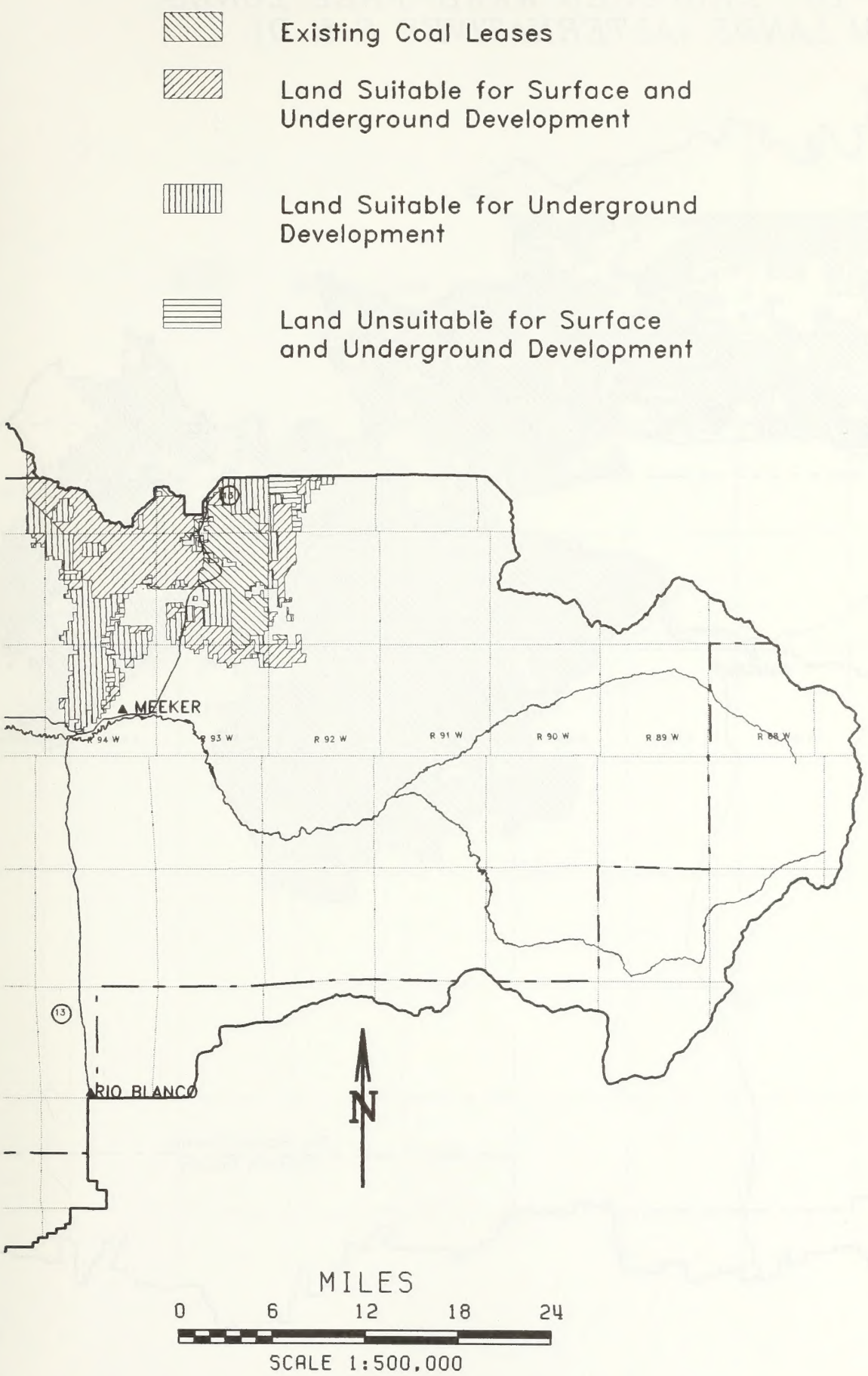
MAP 2-8. LANDS AVAILABLE FOR SODIUM LEASING AND DEVELOPMENT (ALTERNATIVE D)




Existing Sodium Leases
Available for Multi–Mineral Leasing Only
Available for Sodium Leasing
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

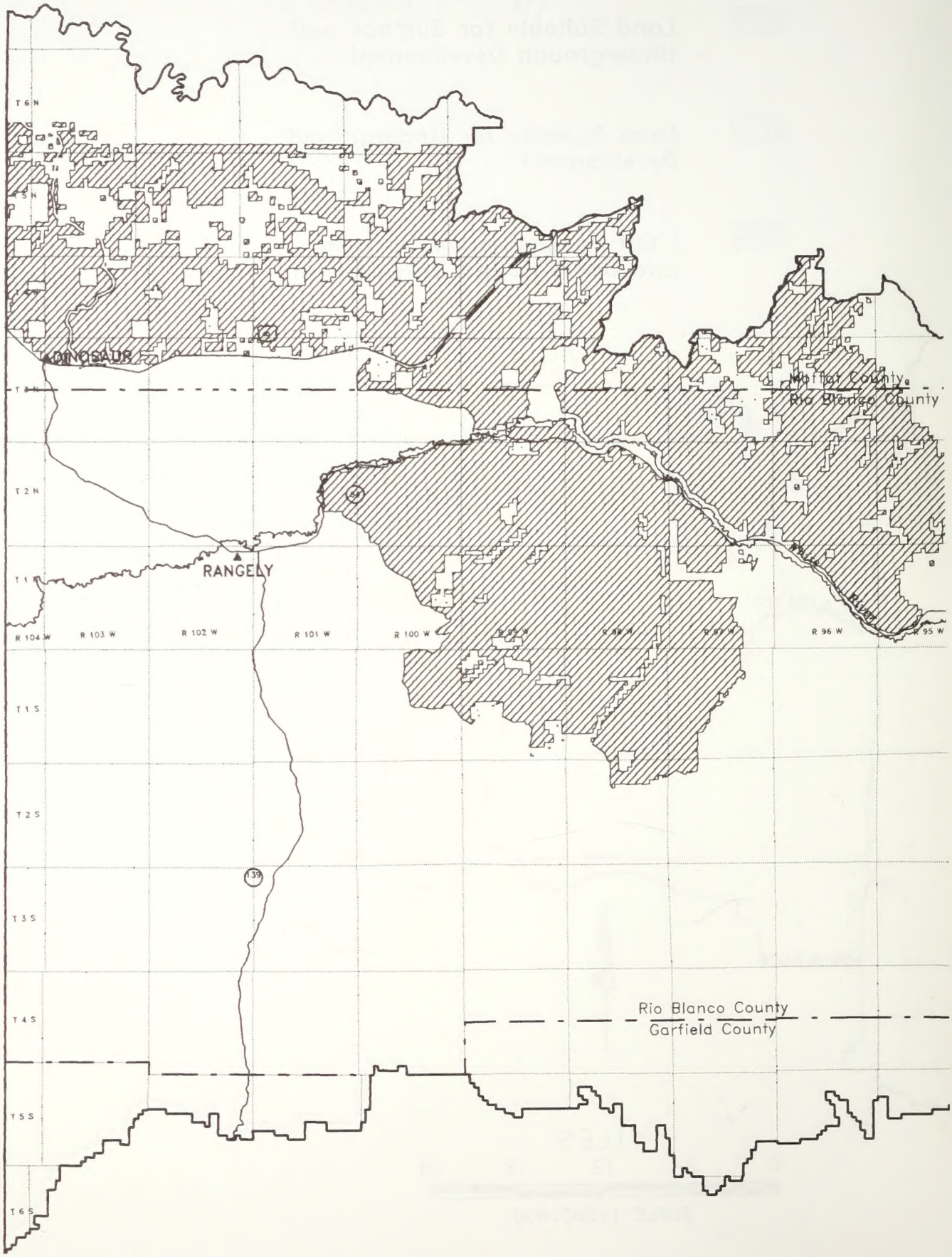
MAP 2–9. LANDS SUITABLE FOR COAL LEASING AND DEVELOPMENT (ALTERNATIVE D)

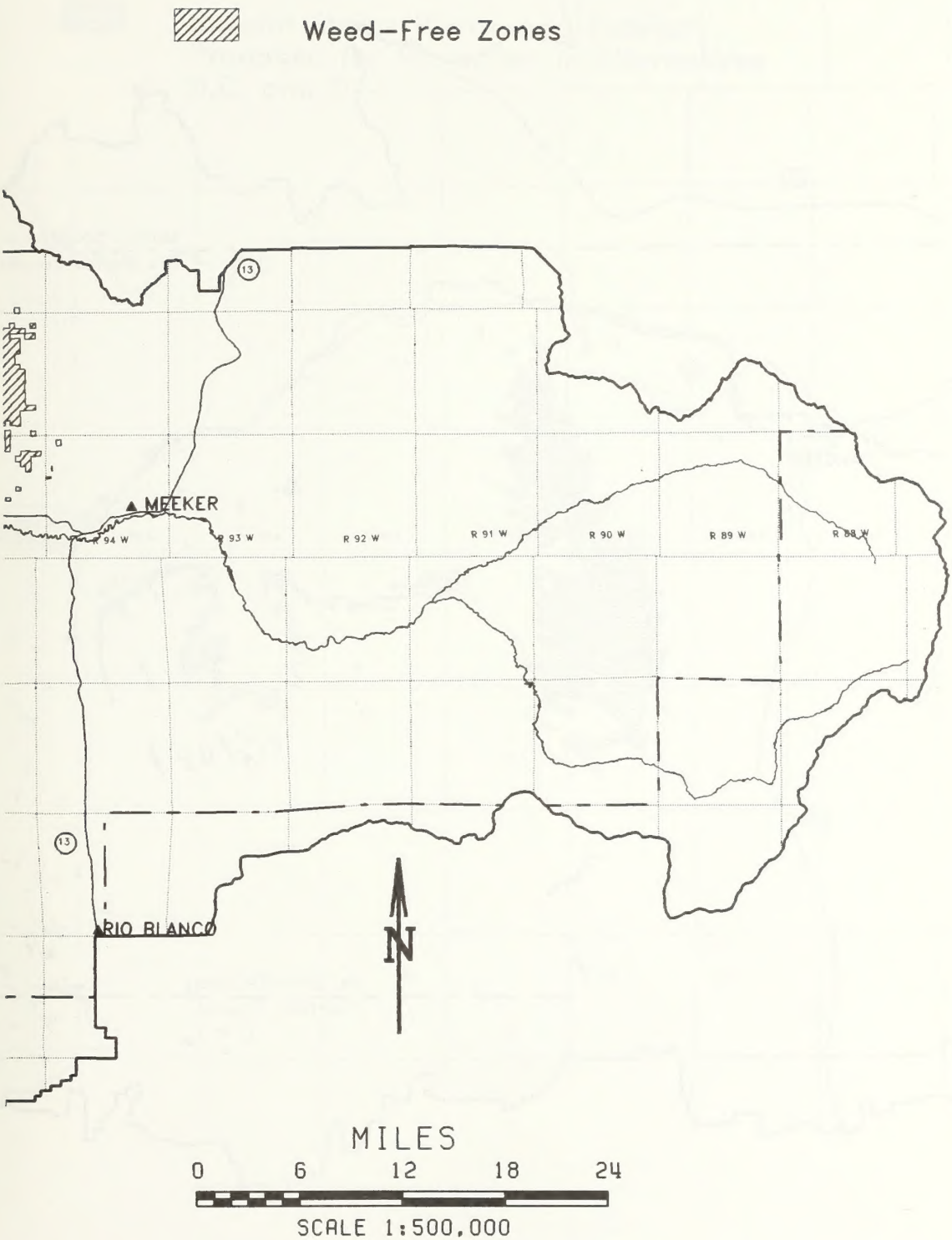



Existing Coal Leases
Land Suitable for Surface and Underground Development
Land Suitable for Underground Development
Land Unsuitable for Surface and Underground Development
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
RIO BLANCO
N
MILES
0 6 12 18 24
SCALE 1:500,000

MAP 2-9

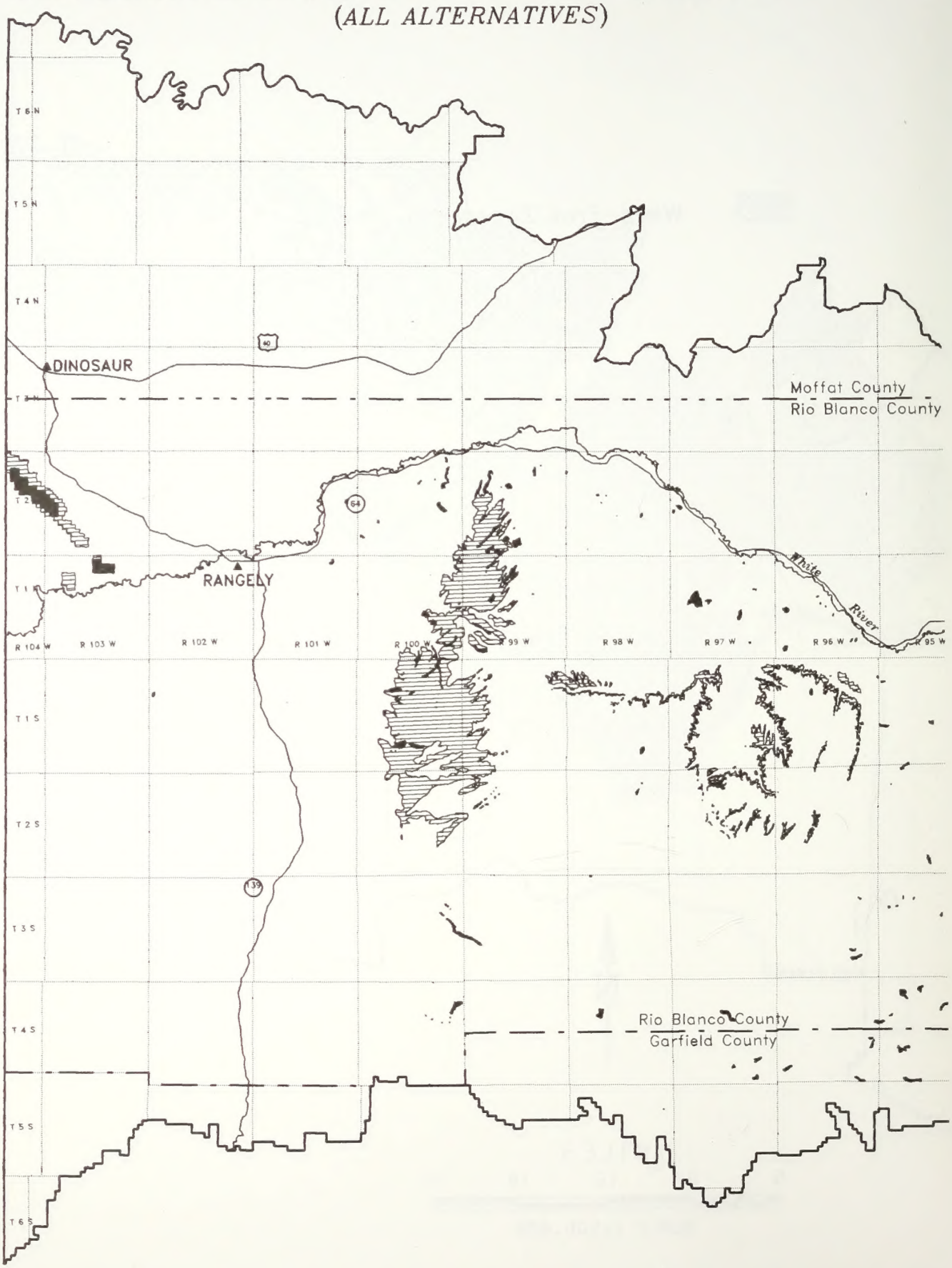
MAP 2–10. PROPOSED WEED–FREE ZONES ON BLM LANDS (ALTERNATIVES C & D)




Weed–Free Zones
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

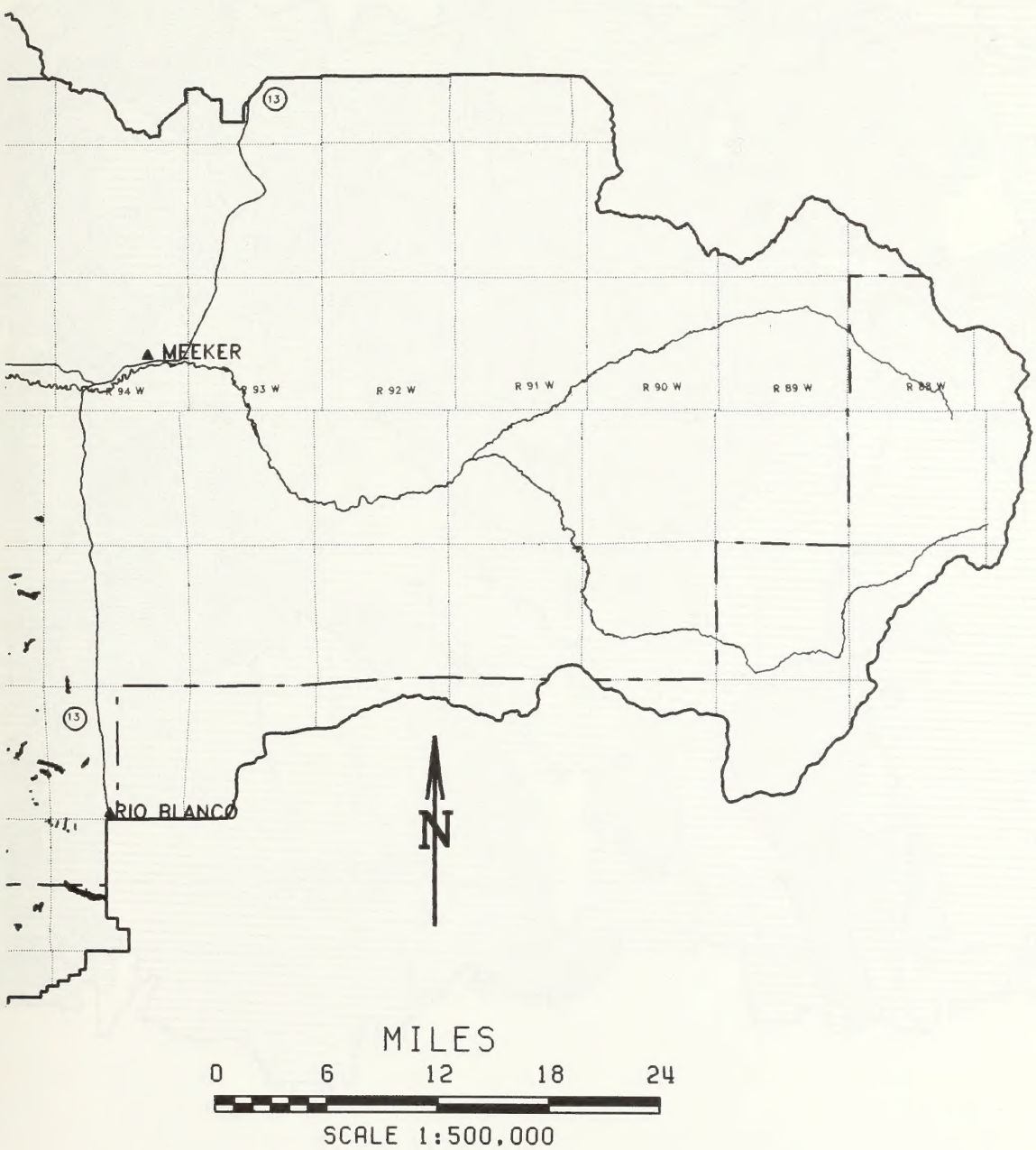
MAP 2-1

MAP 2–11. SPECIAL STATUS PLANTS ON BLM AND SPLIT ESTATE LANDS PROTECTED BY NSO STIPULATIONS (ALL ALTERNATIVES)



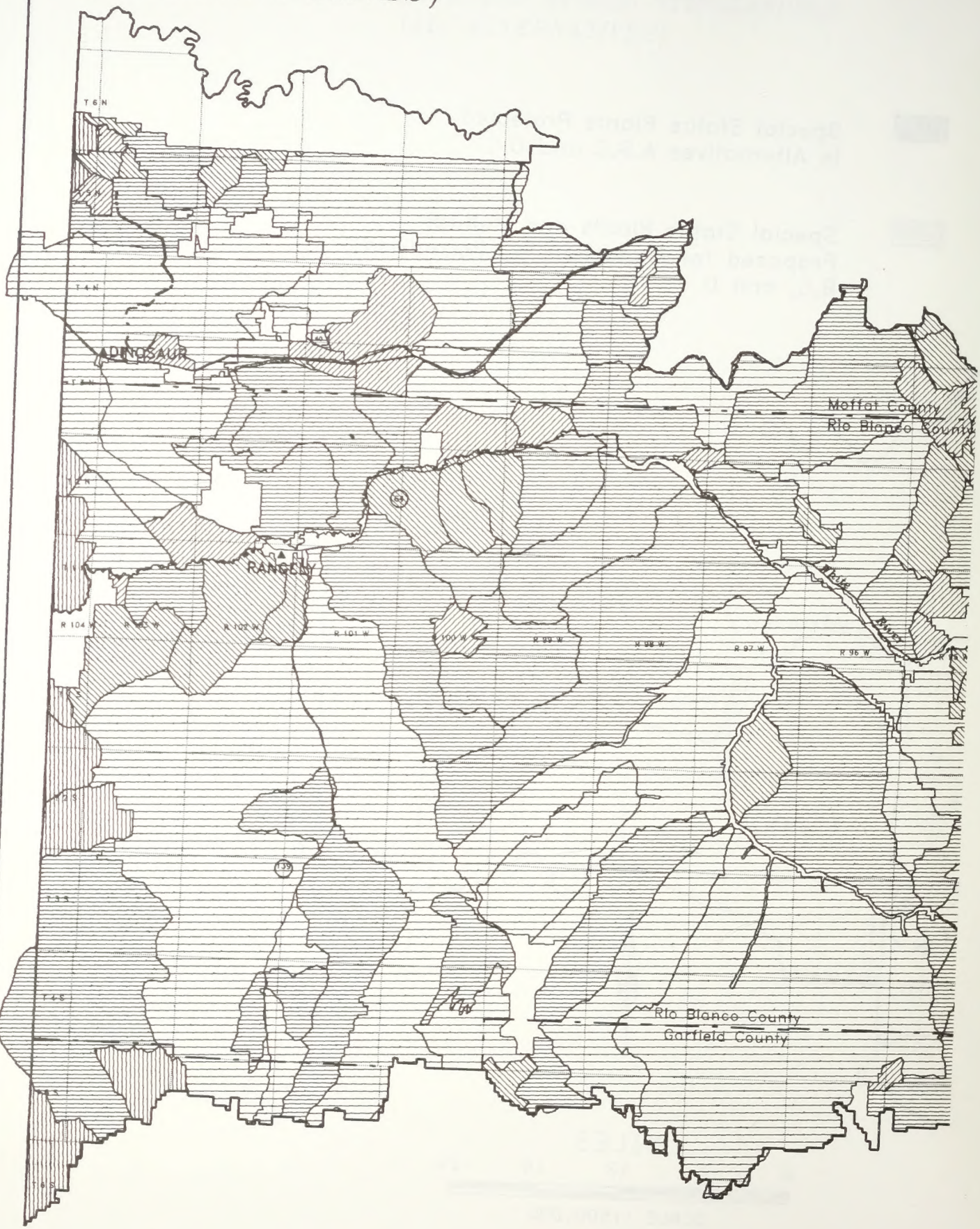
Special Status Plants Protected in Alternatives A,B,C and D

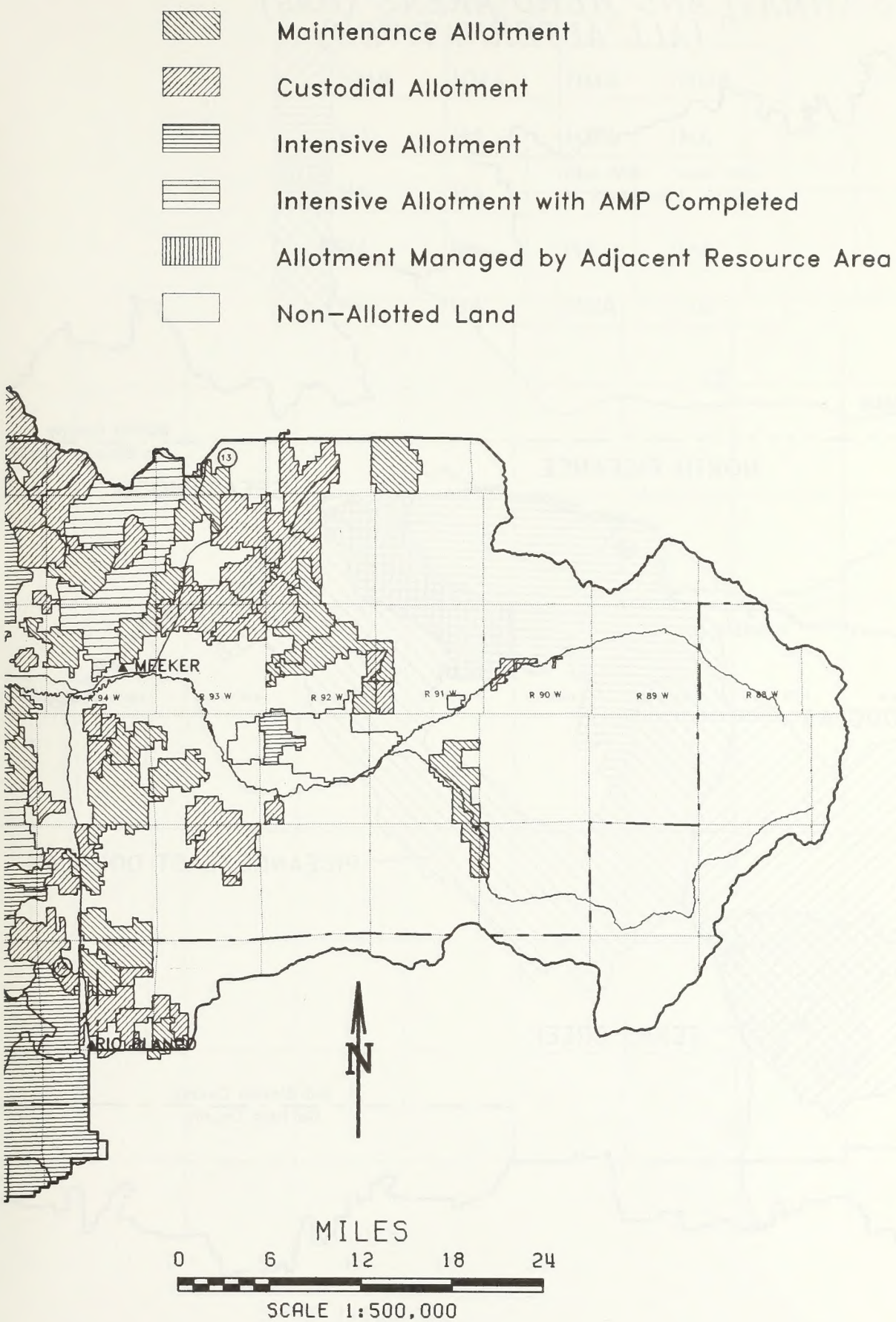
Special Status Plants and Habitat Proposed for Protection in Alternatives B,C, and D



MAP 2-1

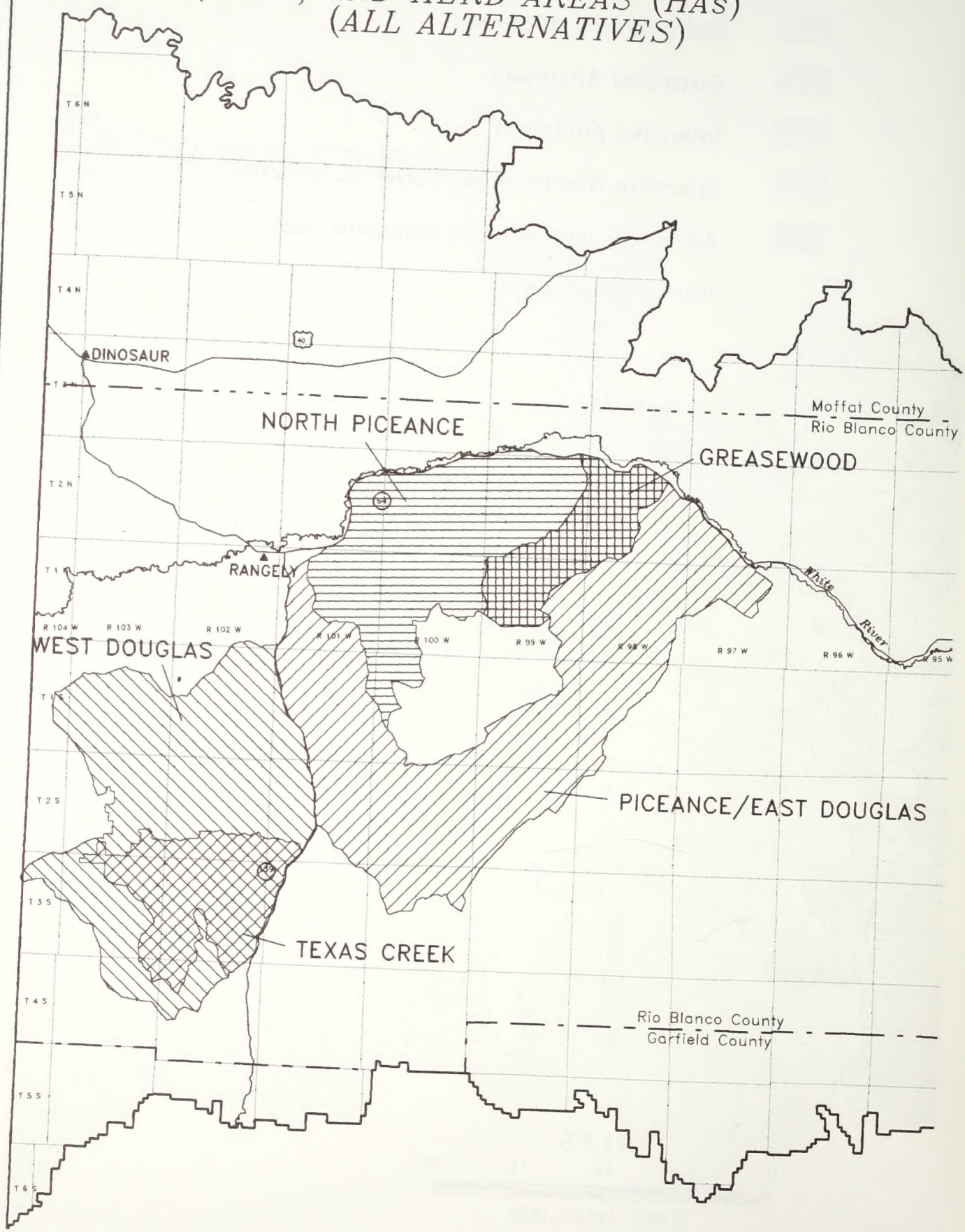
MAP 2-12. ALLOTMENT CATEGORIZATION (ALL ALTERNATIVES)



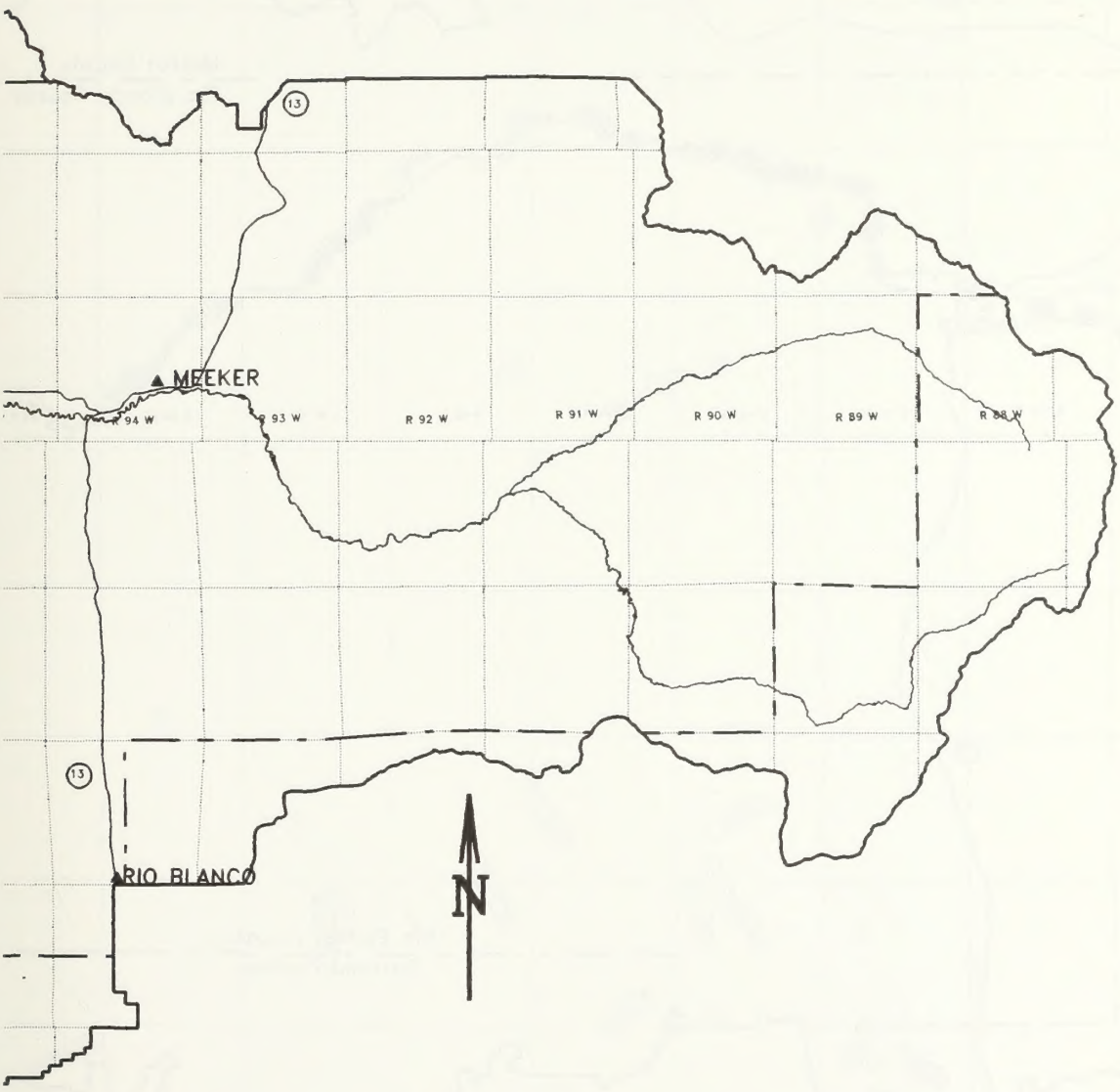

Maintenance Allotment
Custodial Allotment
Intensive Allotment
Intensive Allotment with AMP Completed
Allotment Managed by Adjacent Resource Area
Non–Allotted Land
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
RIO BLANCO
N
MILES
0 6 12 18 24
SCALE 1:500,000

MAP 2-1

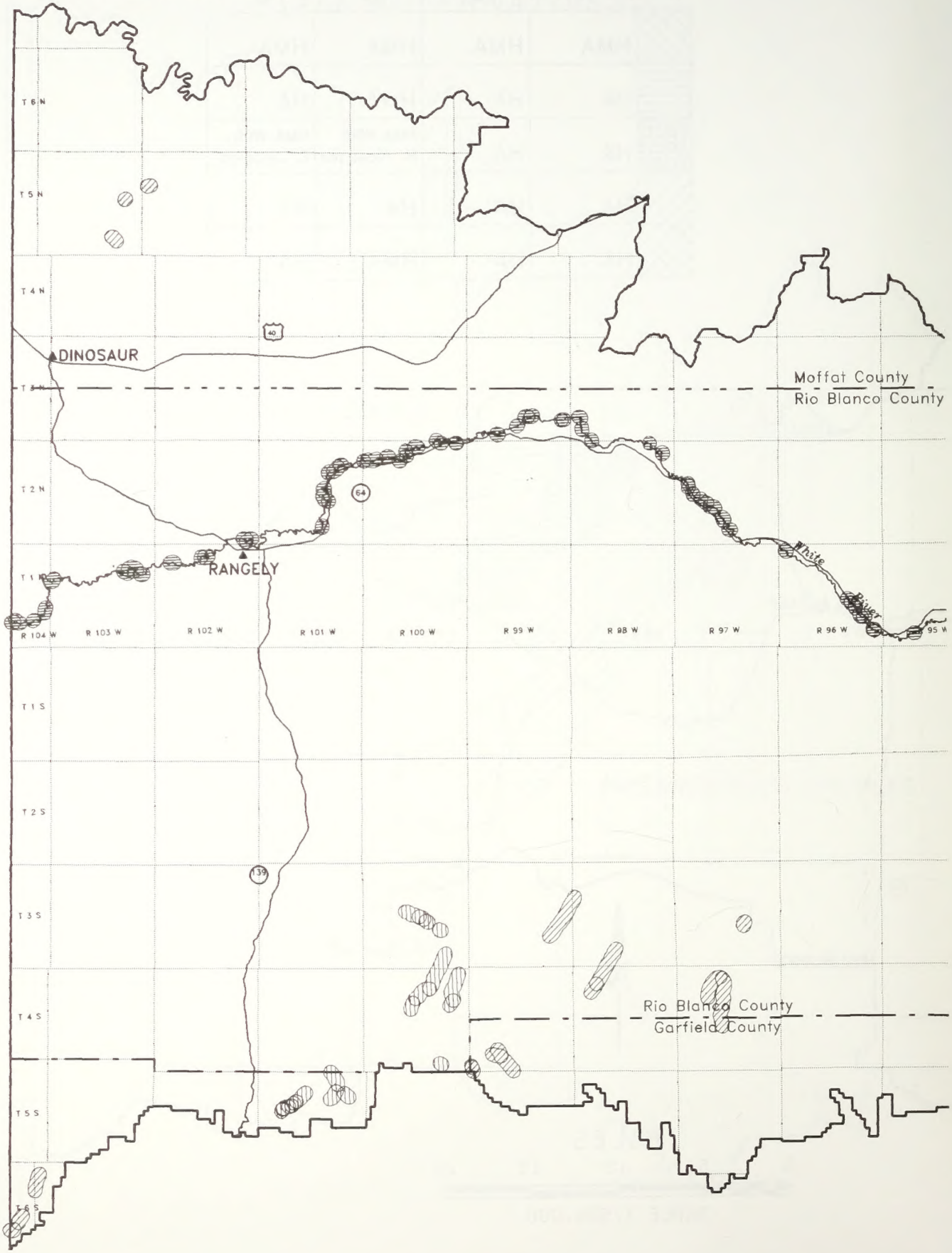
MAP 2–13. WILD HORSE HERD MANAGEMENT AREAS (HMAs) AND HERD AREAS (HAs) (ALL ALTERNATIVES)



	ALTERNATIVE A	B	C	D
	HMA	HMA	HMA	HMA
	HA	HA	HMA	HA
	HA	HA	HMA With N. Piceance	HMA With E. Douglas
	HA	HA	HA	HA
	HA	HA	HMA	HA



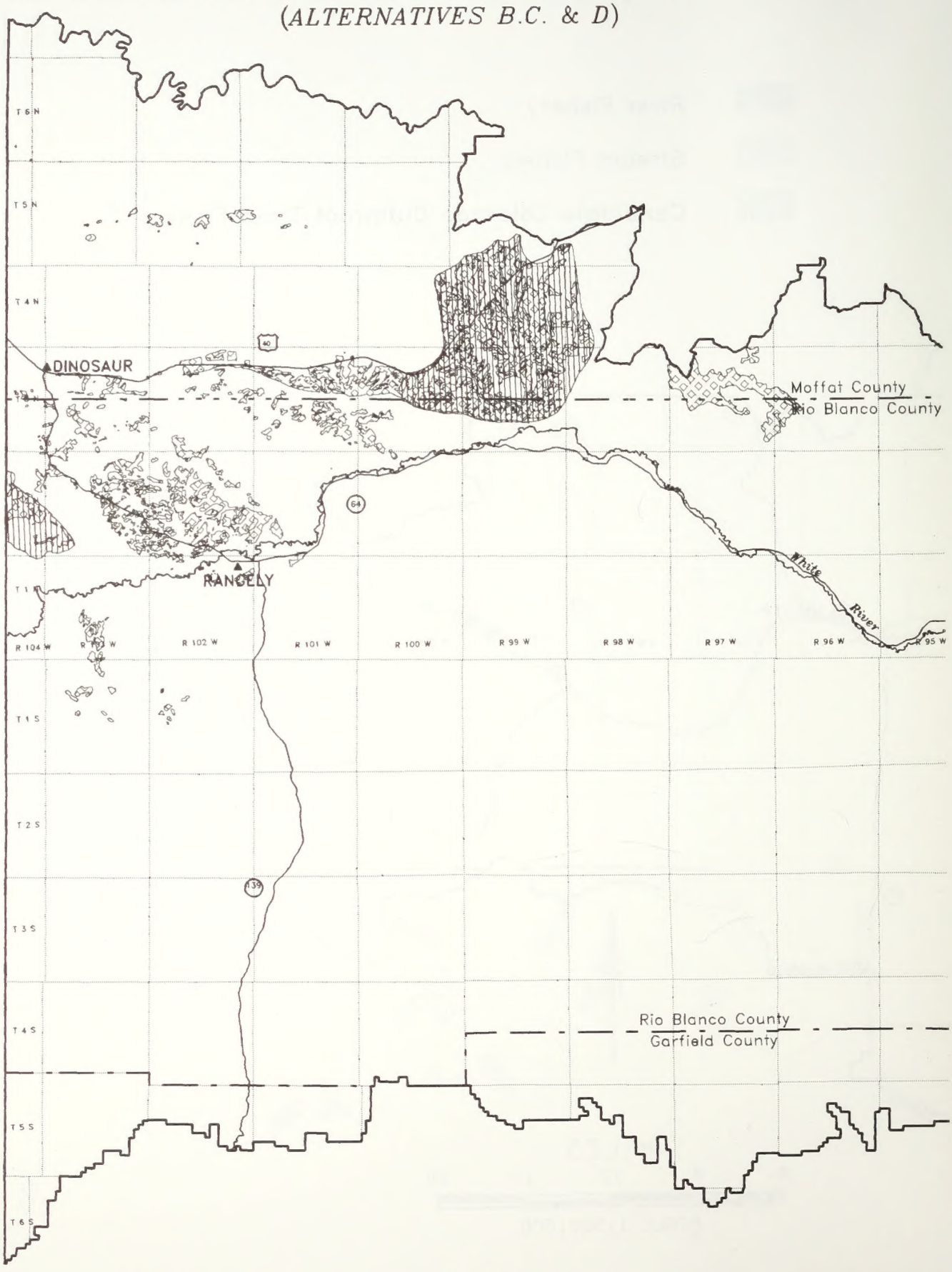
MAP 2–14. PROTECTED RESIDENT FISHERIES ON BLM LAND (ALL ALTERNATIVES)

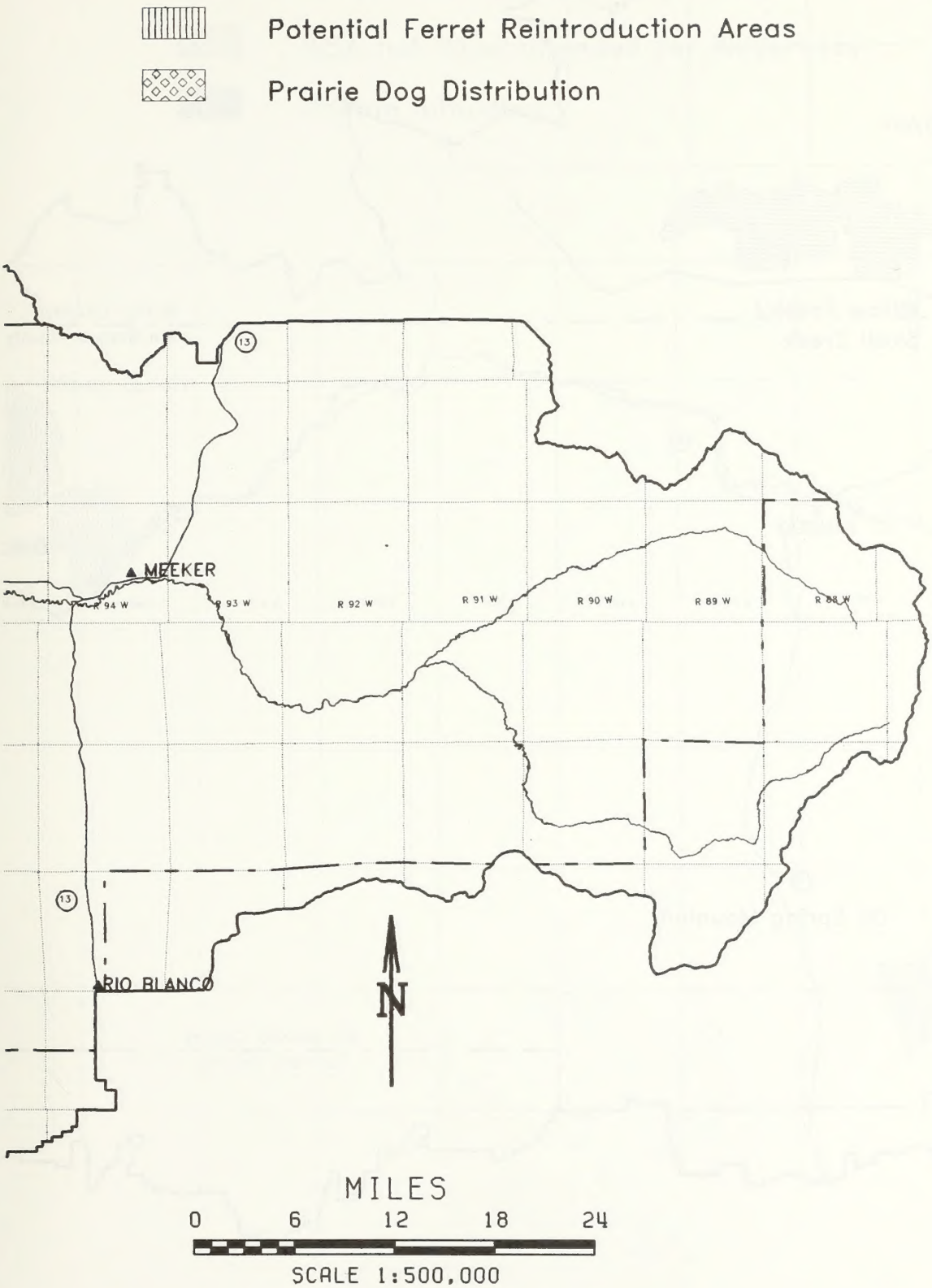


River Fishery
Stream Fishery
Candidate Colorado Cutthroat Trout Fishery
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-1

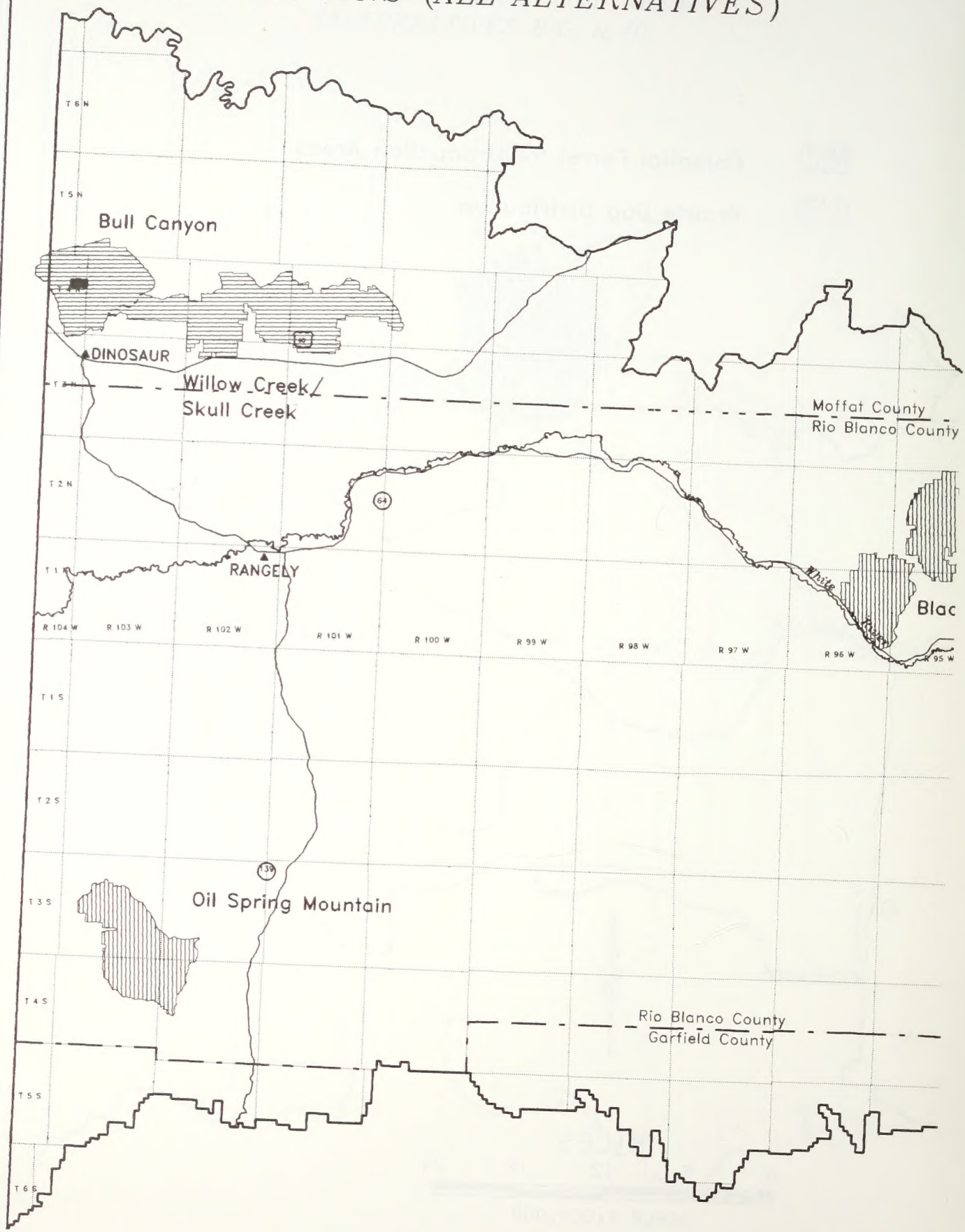
MAP 2–15. PRAIRIE DOG DISTRIBUTION & POTENTIAL BLACK–FOOTED FERRET REINTRODUCTION AREAS (ALTERNATIVES B.C. & D)

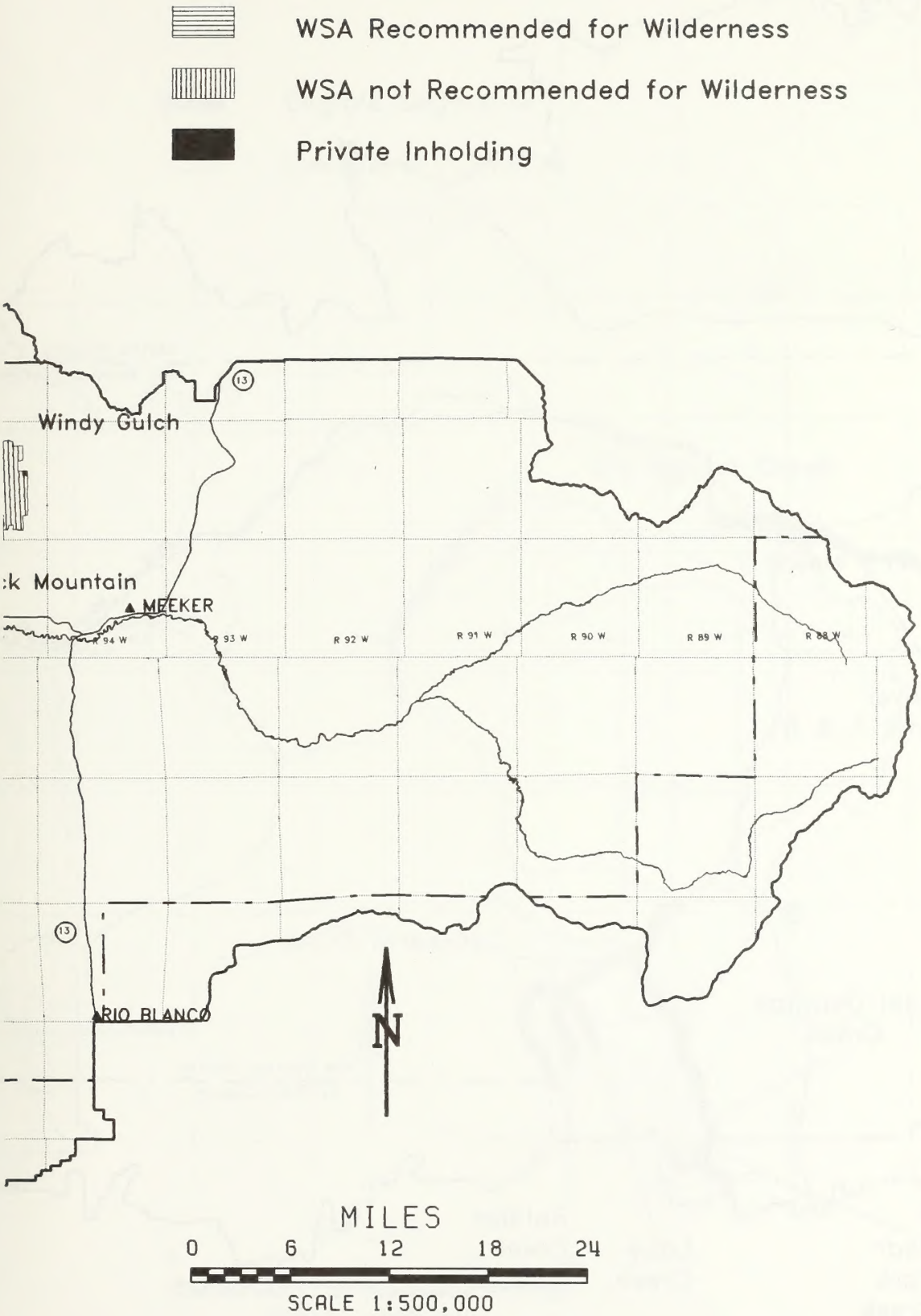



Potential Ferret Reintroduction Areas
Prairie Dog Distribution
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-1

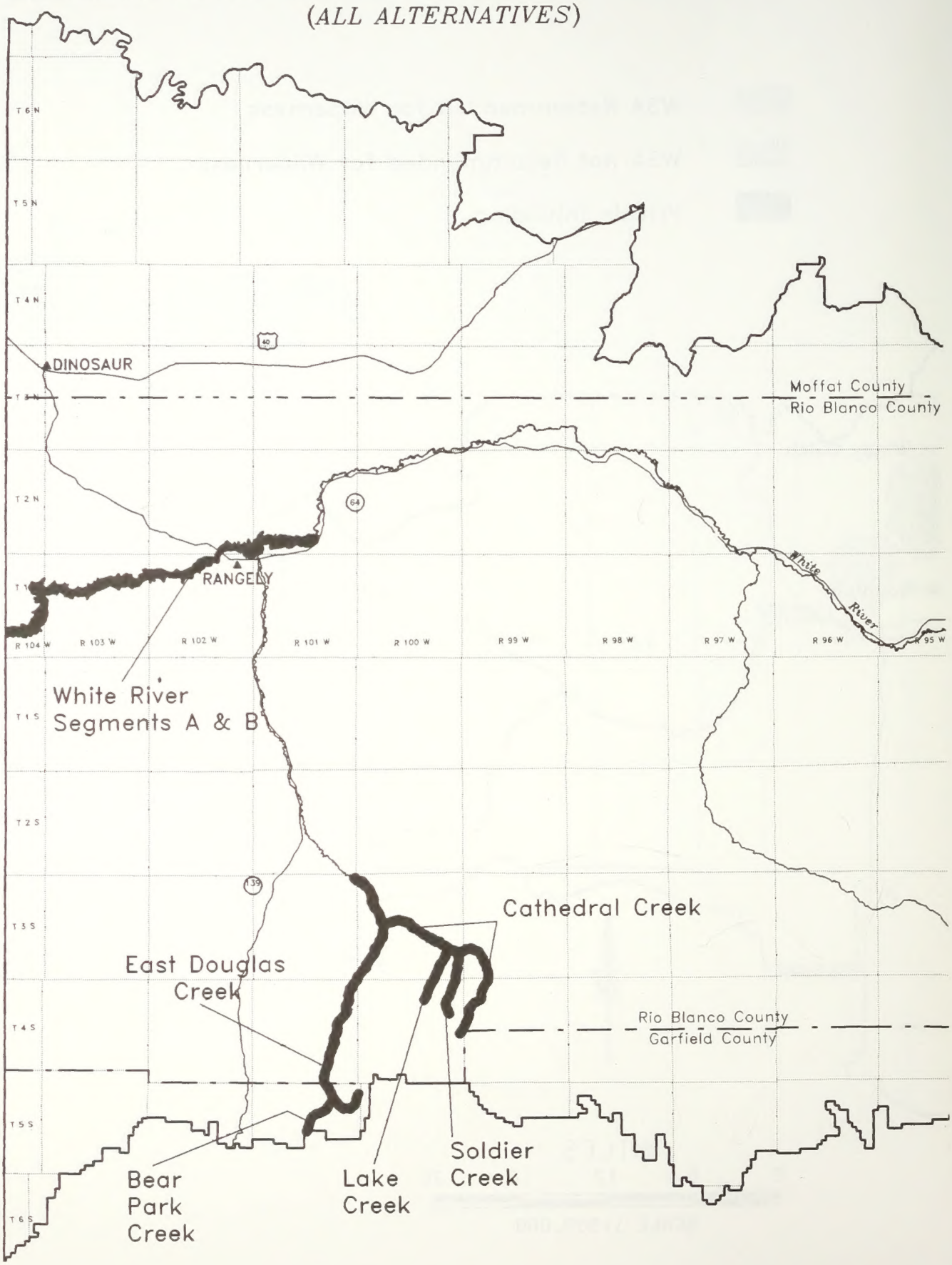
MAP 2–16. WILDERNESS STUDY AREA RECOMMENDATIONS (ALL ALTERNATIVES)

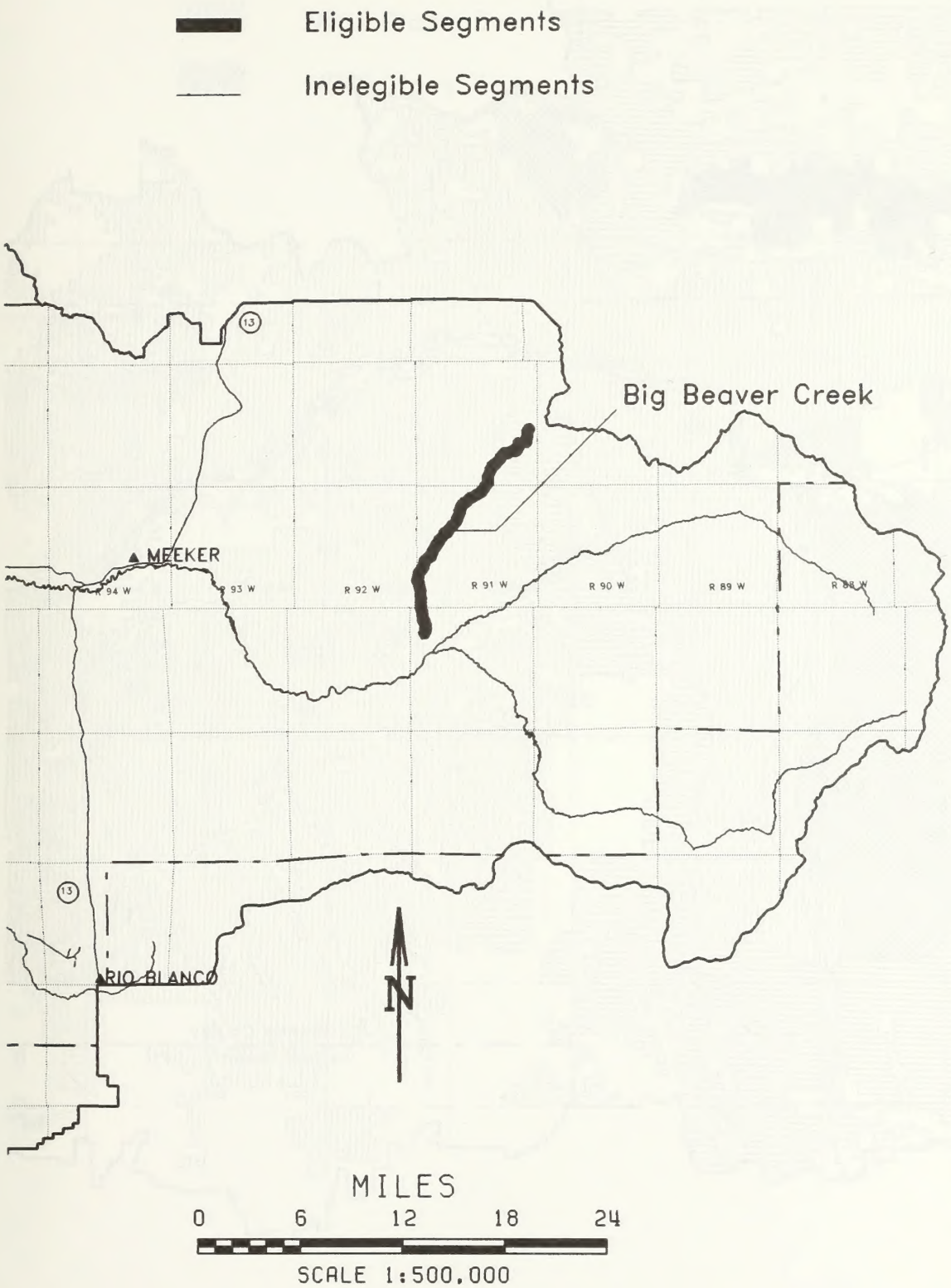



WSA Recommended for Wilderness
WSA not Recommended for Wilderness
Private Inholding
Windy Gulch
k Mountain
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-1

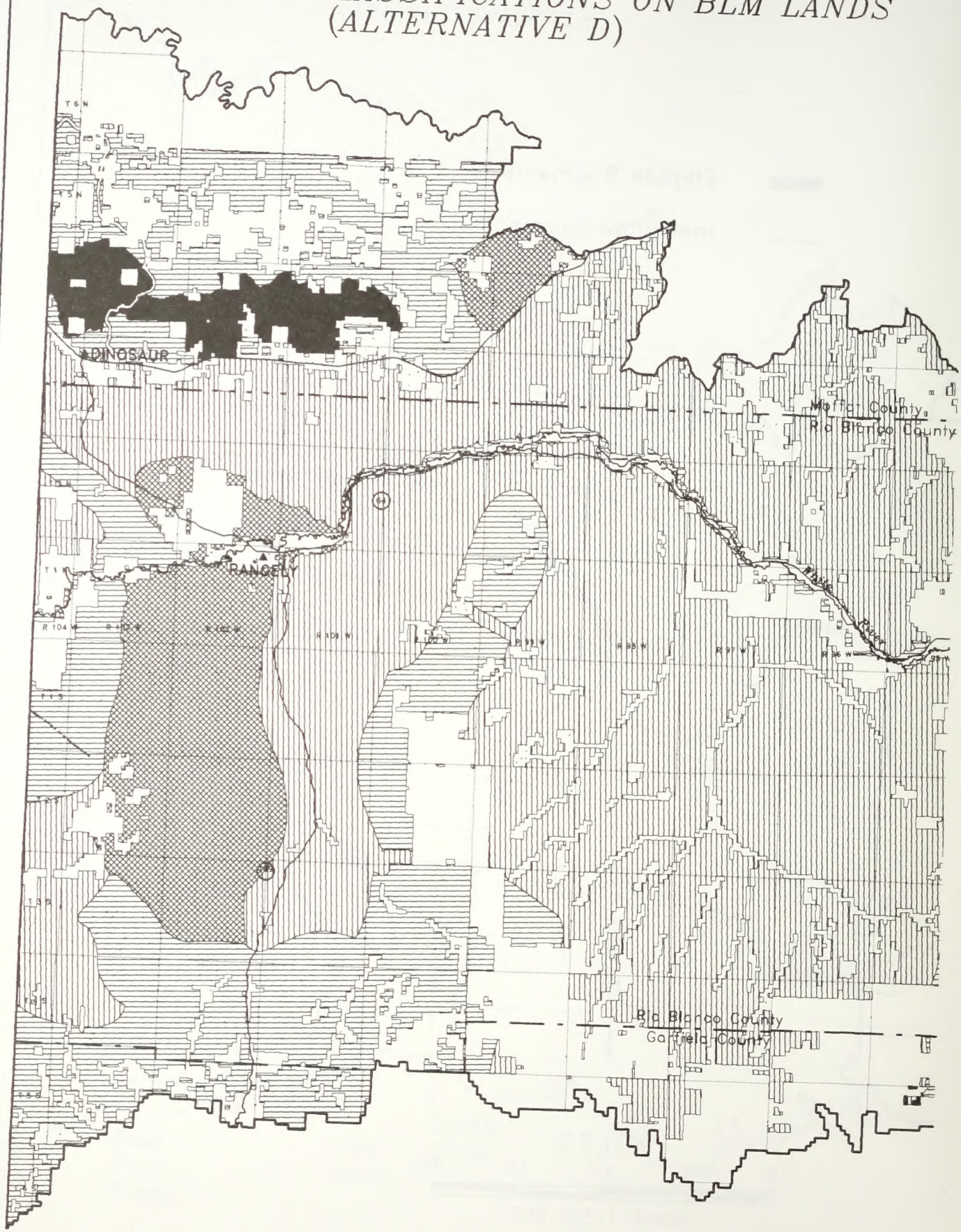
MAP 2–17. RIVER AND STREAM SEGMENTS STUDIED FOR ELIGIBILITY AS WILD AND SCENIC RIVERS (ALL ALTERNATIVES)

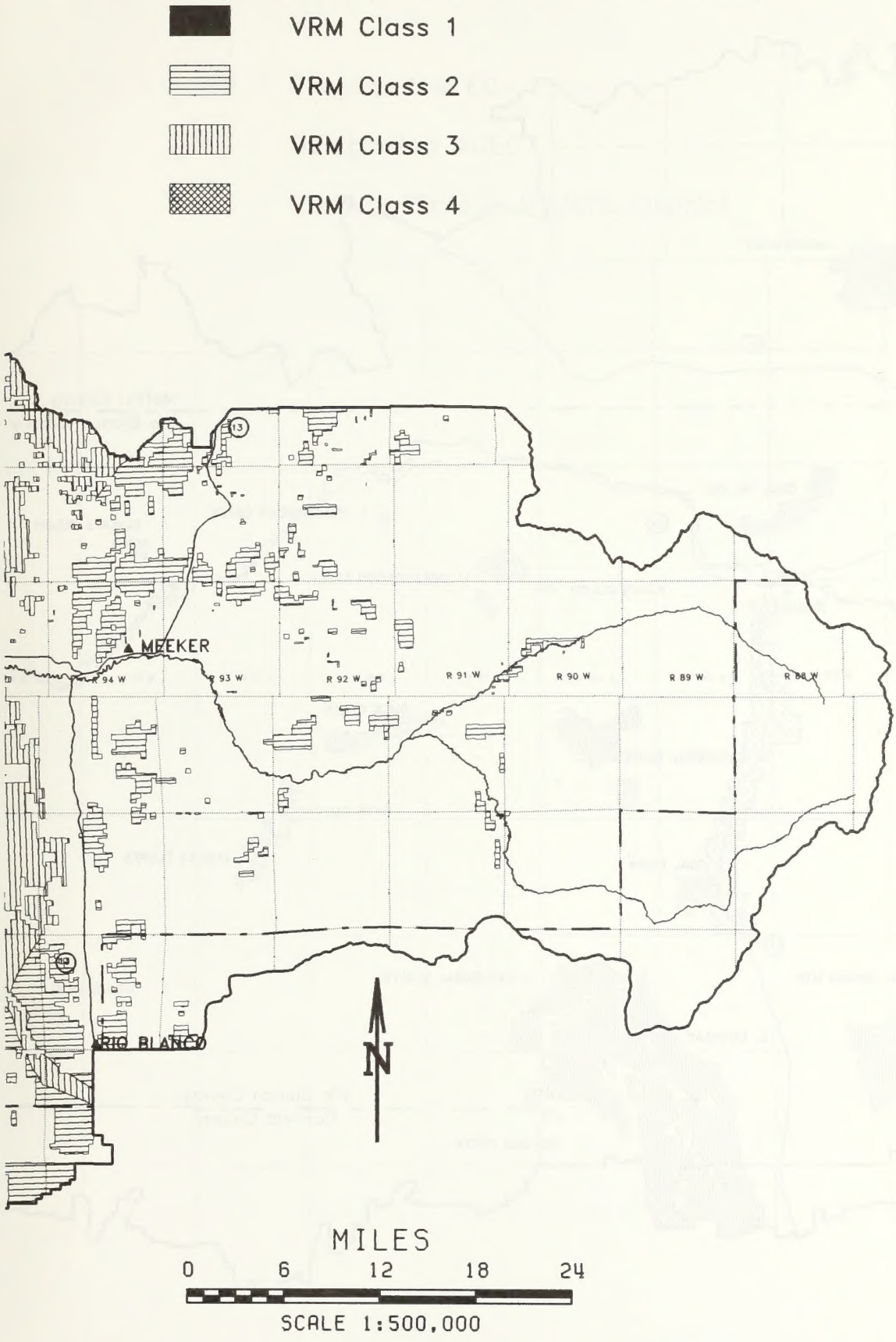



Eligible Segments
Inelegible Segments
Big Beaver Creek
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-1

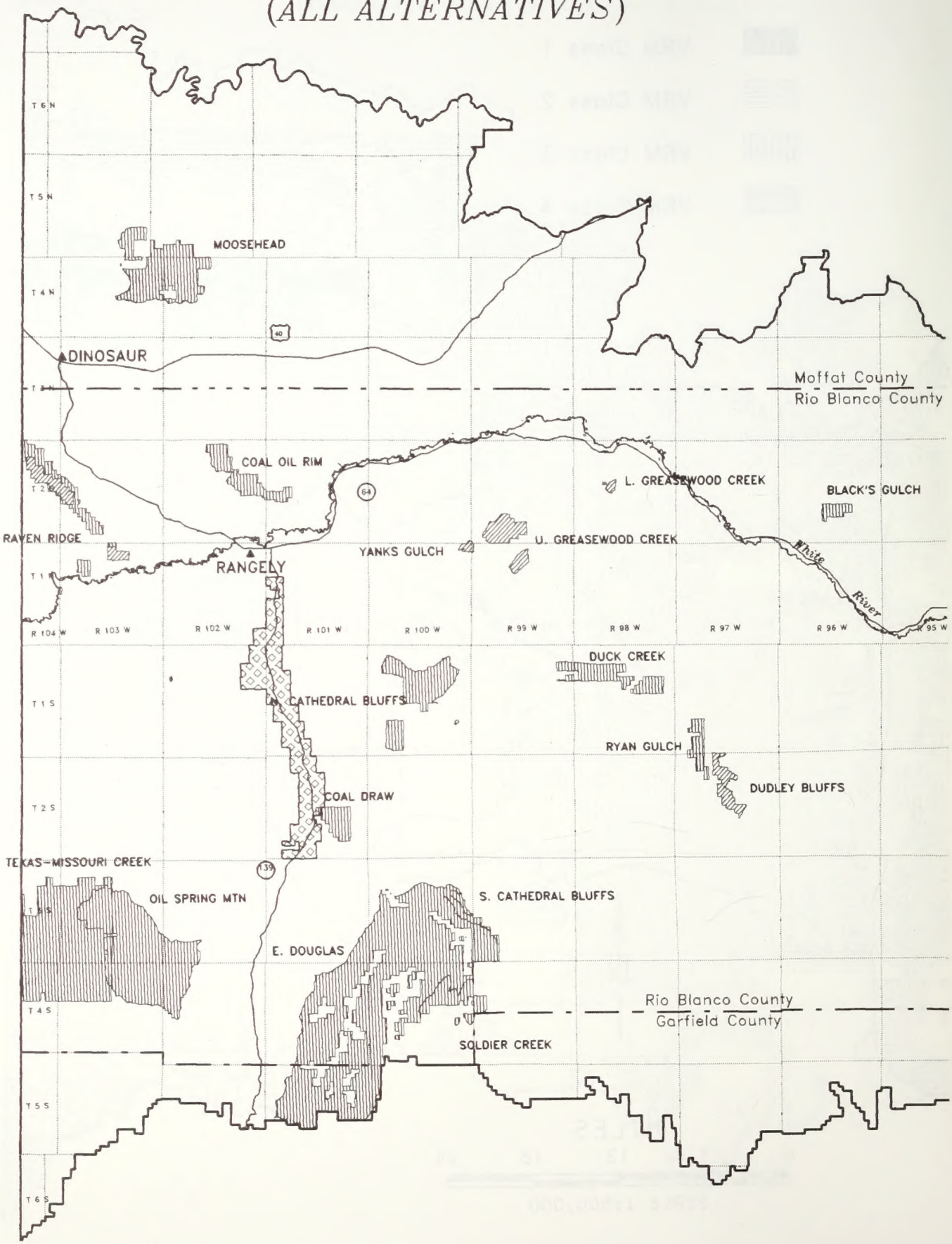
MAP 2–18. PROPOSED VISUAL RESOURCE MANAGEMENT CLASSIFICATIONS ON BLM LANDS (ALTERNATIVE D)

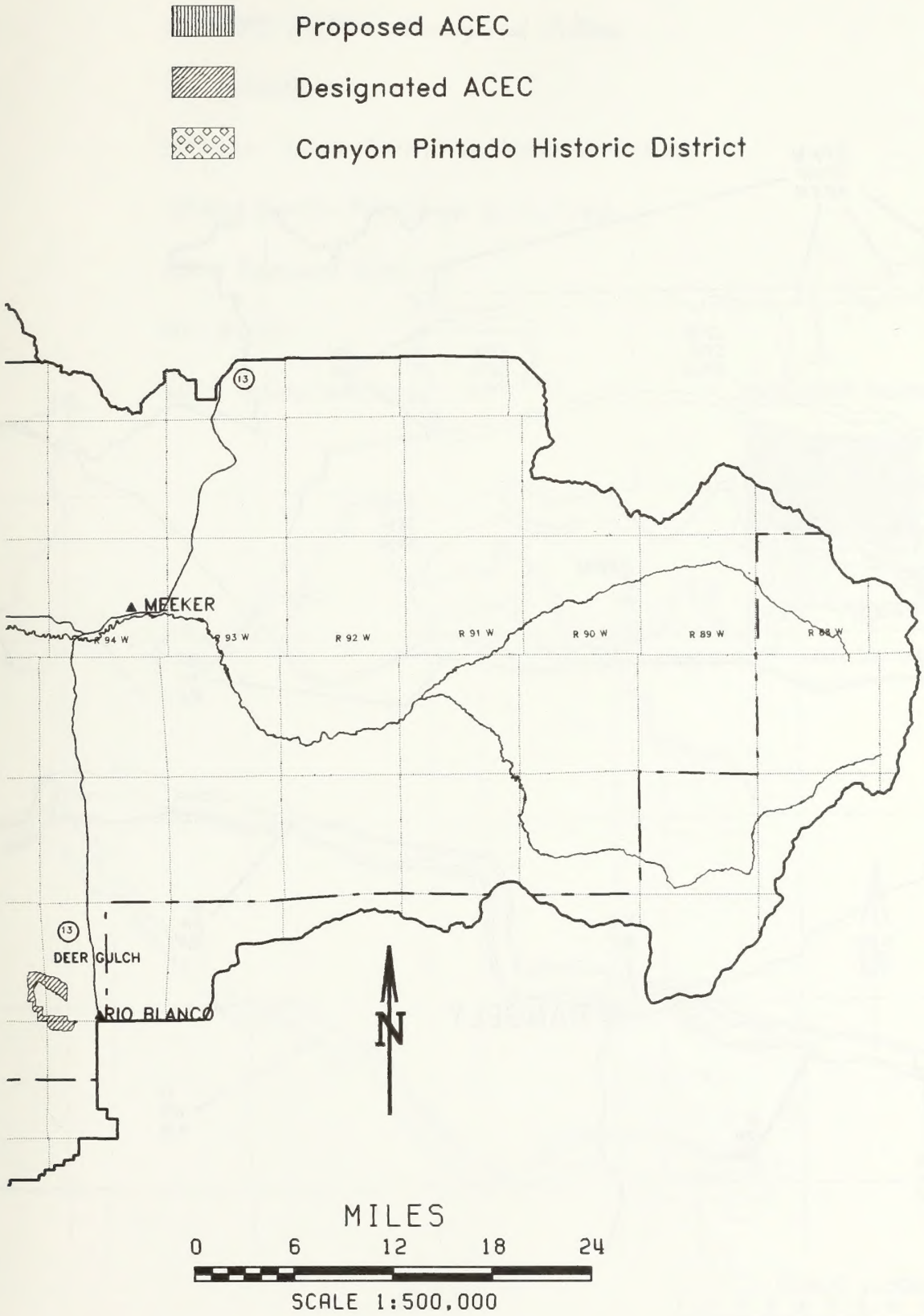



VRM Class 1
VRM Class 2
VRM Class 3
VRM Class 4
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-1

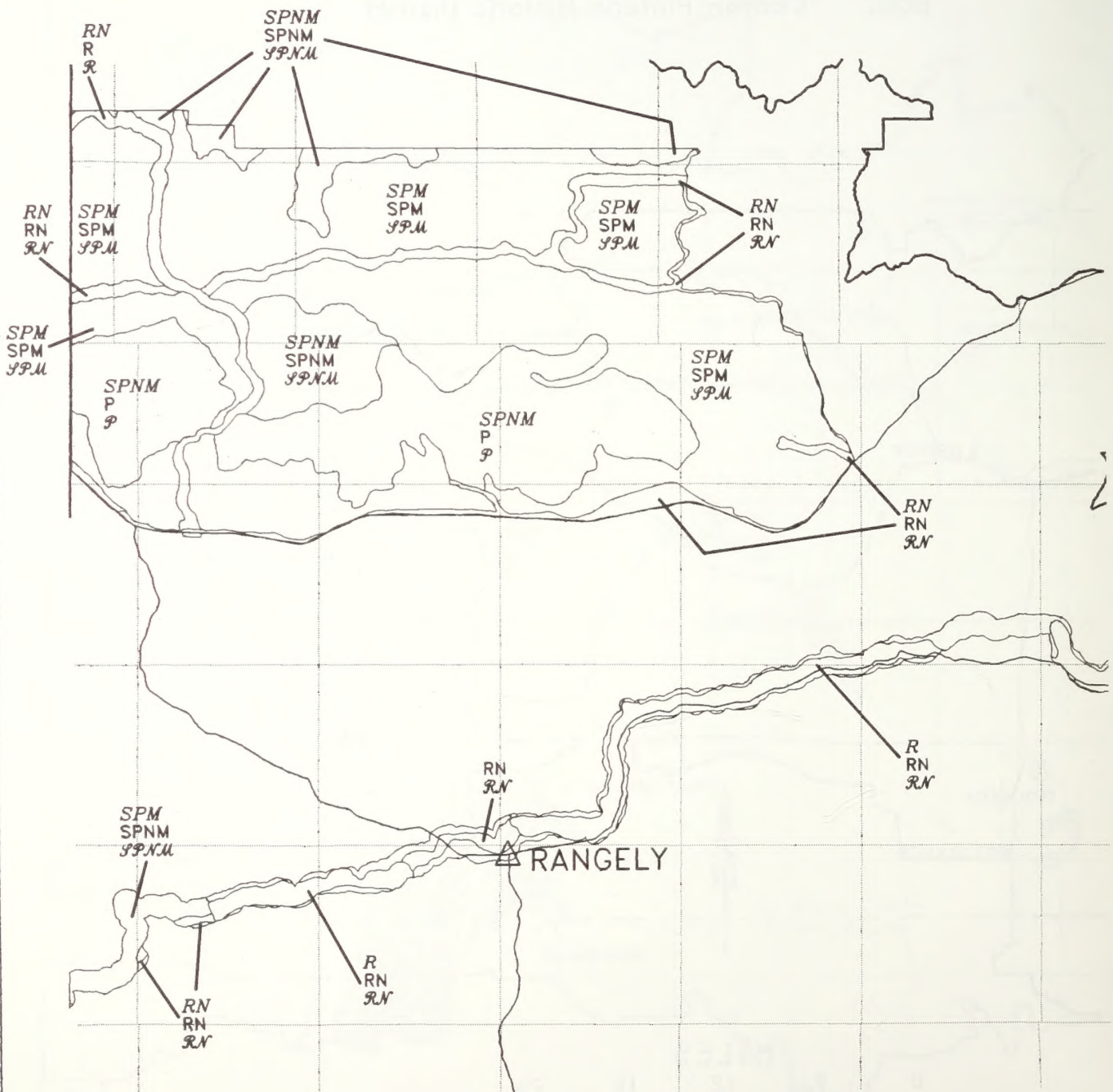
MAP 2–19. DESIGNATED AND PROPOSED ACEC'S AND CANYON PINTADO HISTORIC DISTRICT (ALL ALTERNATIVES)




Proposed ACEC
Designated ACEC
Canyon Pintado Historic District
13
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
DEER GULCH
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-1

MAP 2-20. RECREATION OPPORTUNITY SPECTRUM (ROS) SETTINGS FOR BLUE MOUNTAIN GRA AND WHITE RIVER ACEC (ALTERNATIVE D)



ITALIC FONT= Physical Setting

BLOCK FONT= Social Setting

SCRIPT FONT= Managerial Setting

P= Primitive

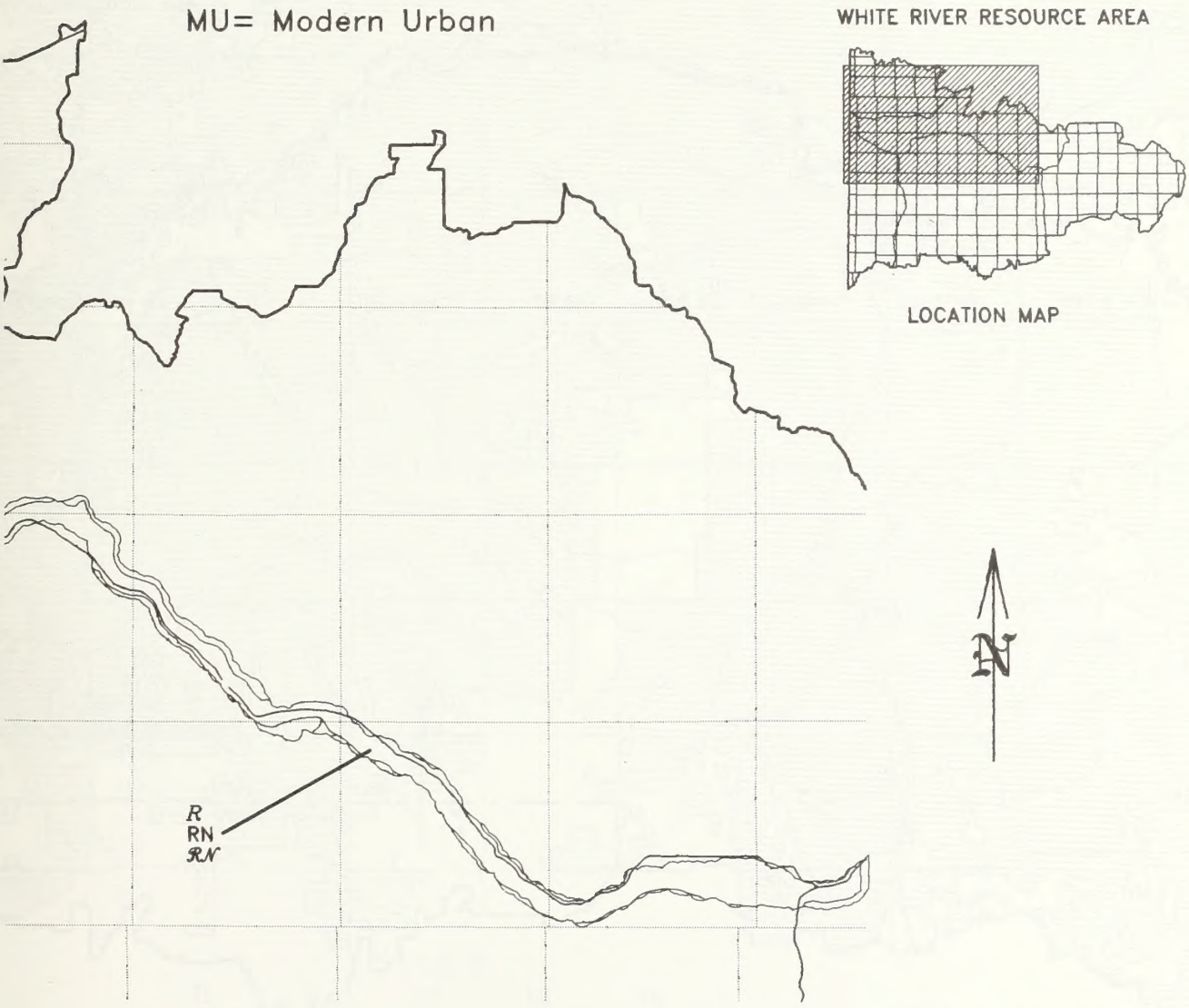
SPNM= Semi-Primitive Nonmotorized

SPM= Semi-Primitive Motorized

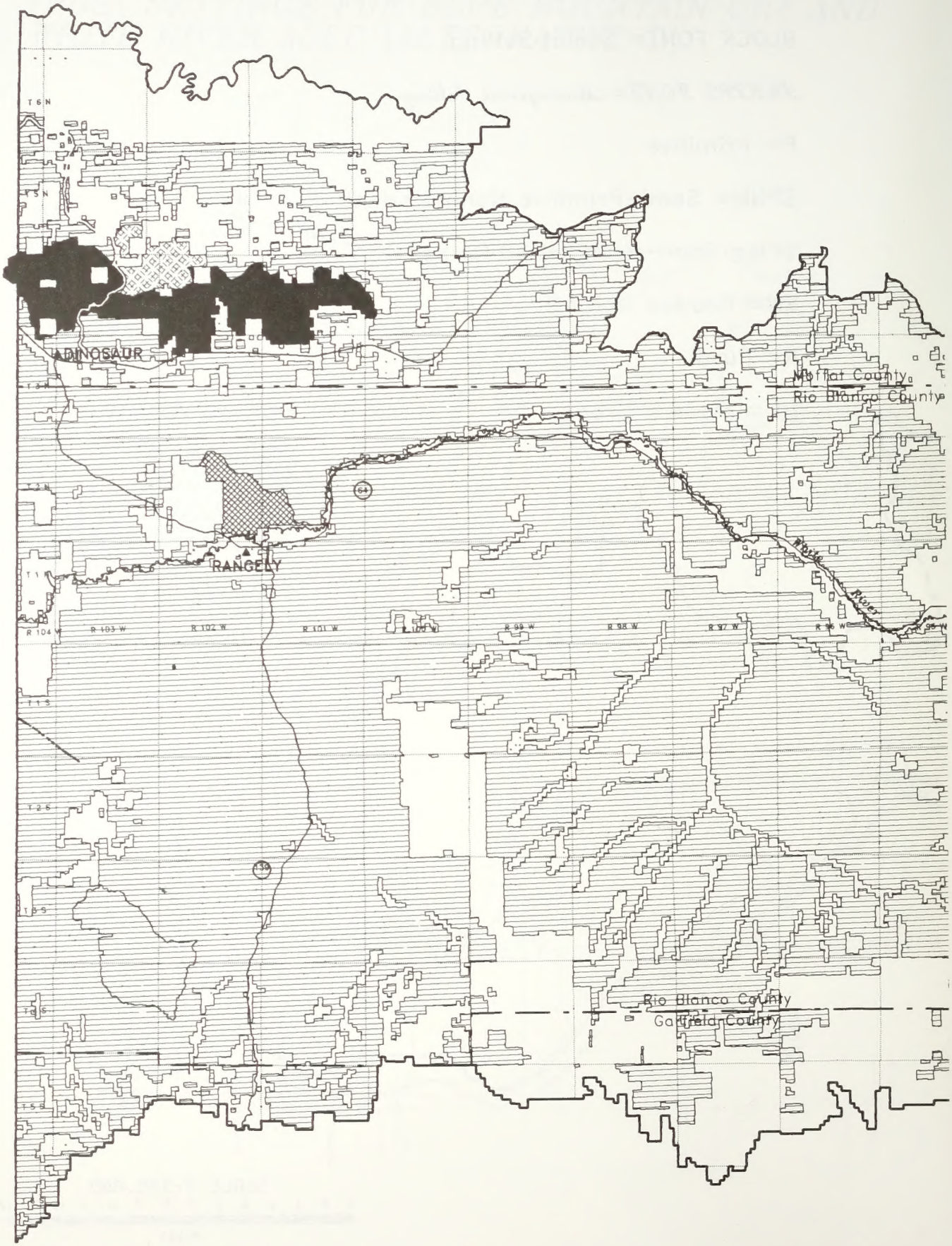
RN= Roaded Natural

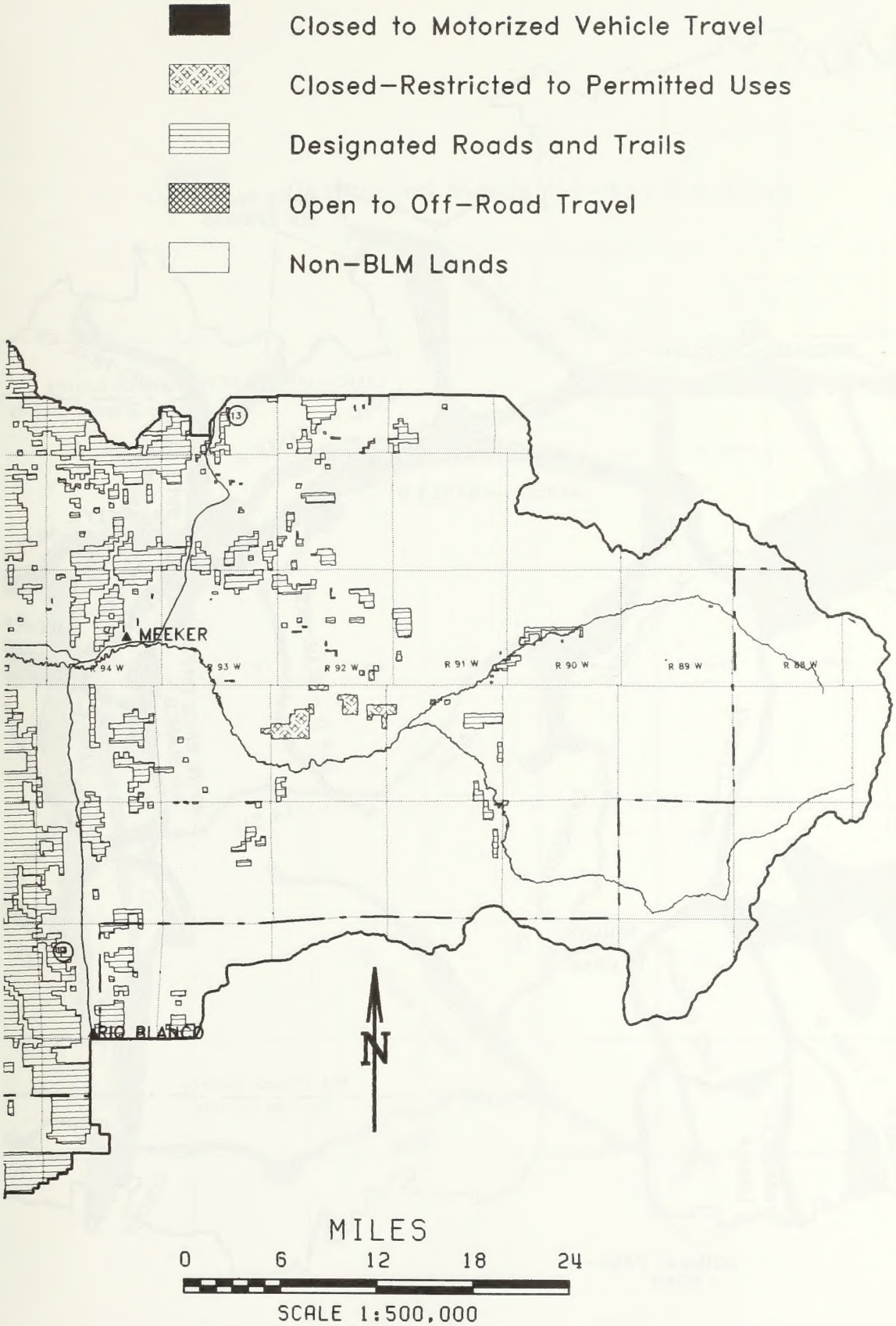
R= Rural

MU= Modern Urban



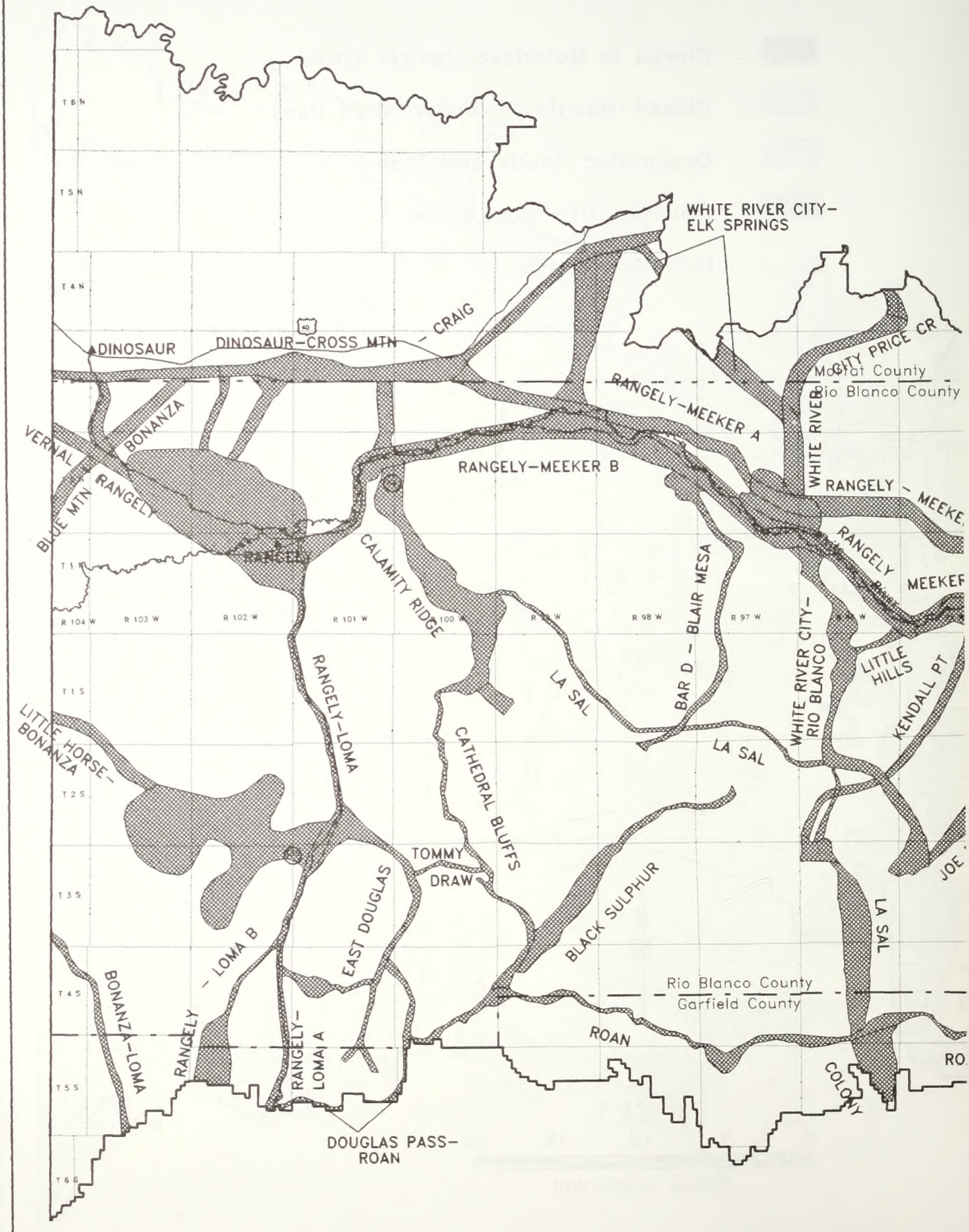
MAP 2–21. MOTORIZED VEHICLE TRAVEL ON BLM LANDS (ALTERNATIVE D)

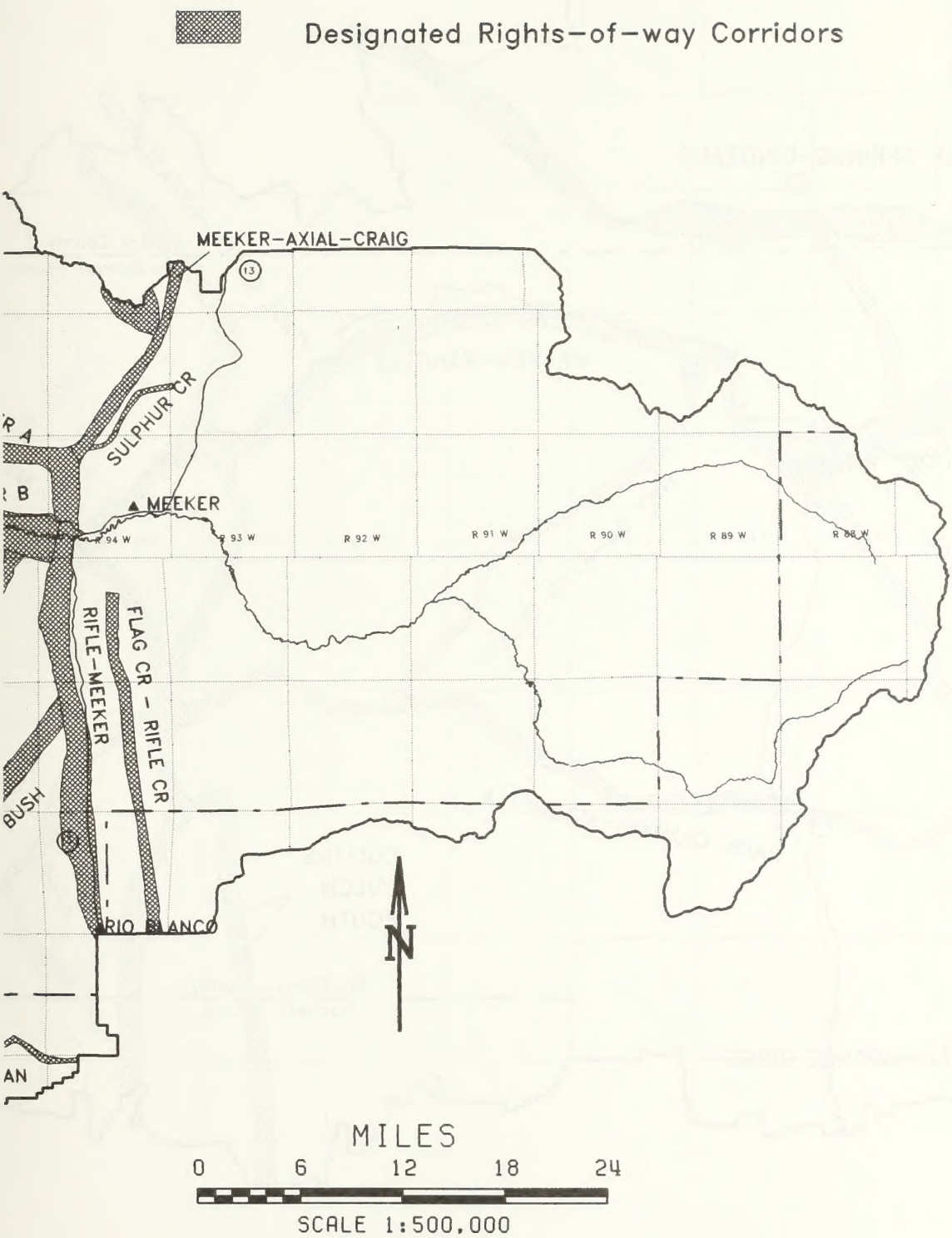



Closed to Motorized Vehicle Travel
Closed–Restricted to Permitted Uses
Designated Roads and Trails
Open to Off–Road Travel
Non–BLM Lands
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-2

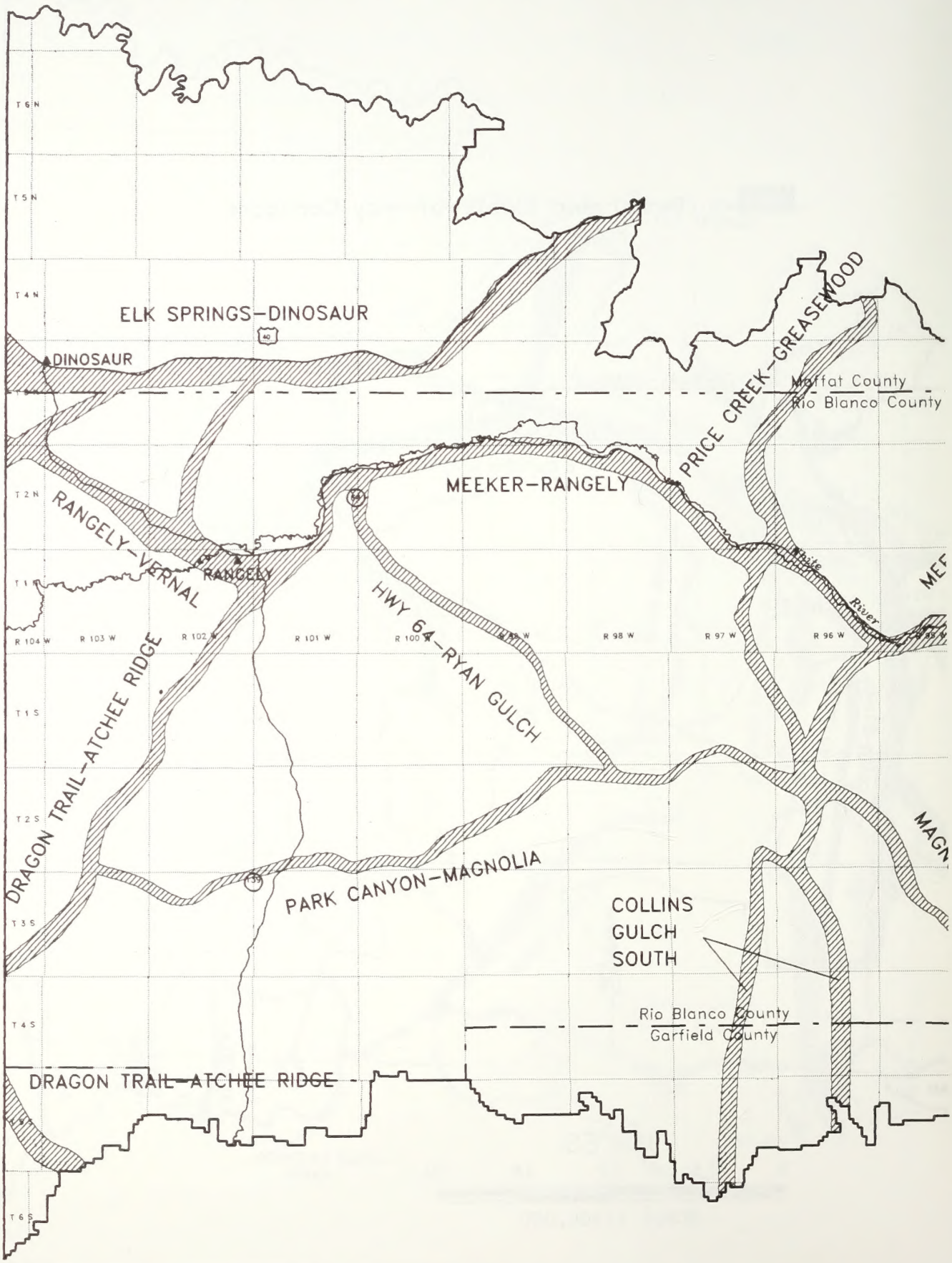
MAP 2-22. EXISTING MAJOR UTILITY CORRIDORS (ALTERNATIVE A)

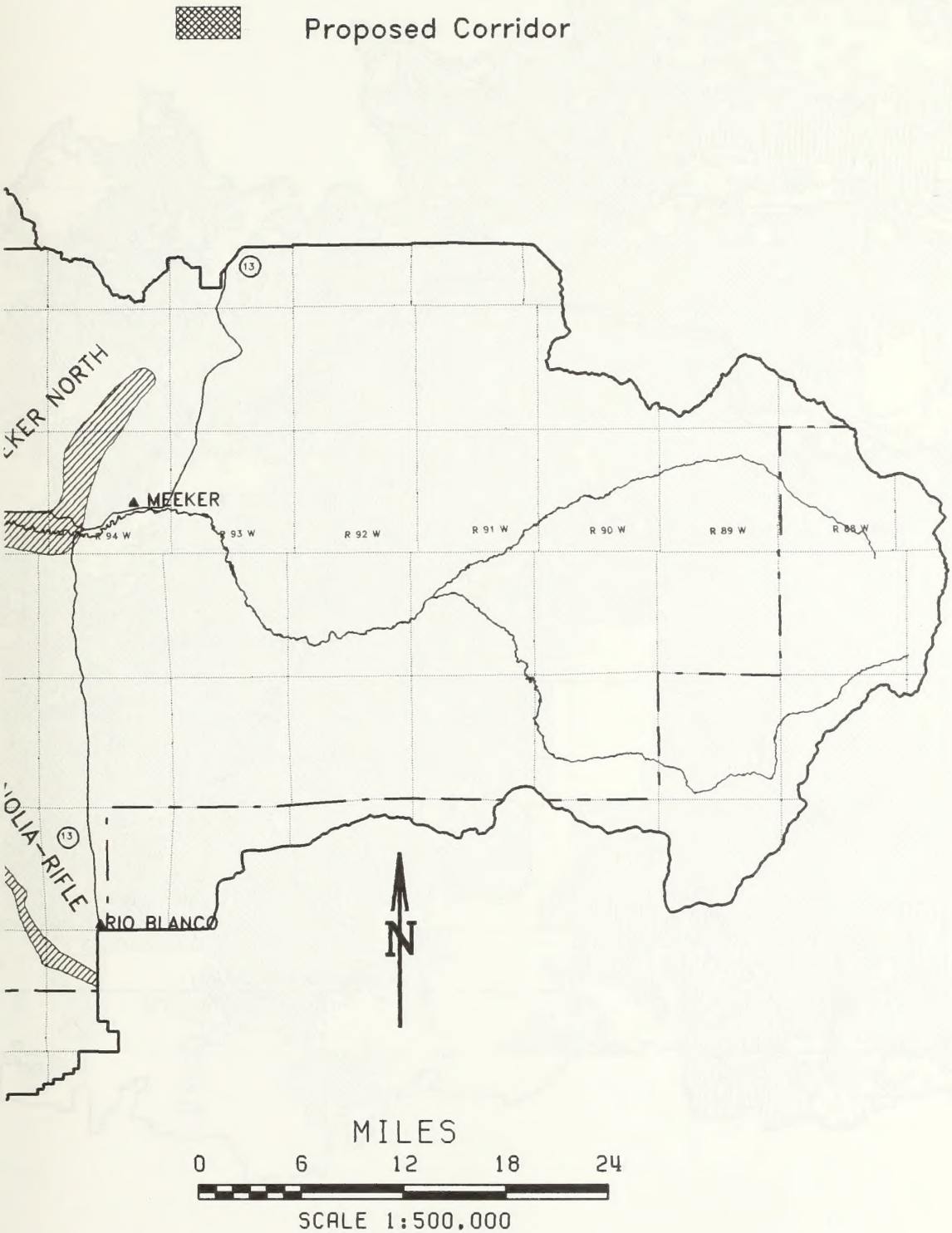



Designated Rights-of-way Corridors
MEEKER-AXIAL-CRAIG
13
SULPHUR CR
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
RIFLE-MEEKER
FLAG CR - RIFLE CR
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-22

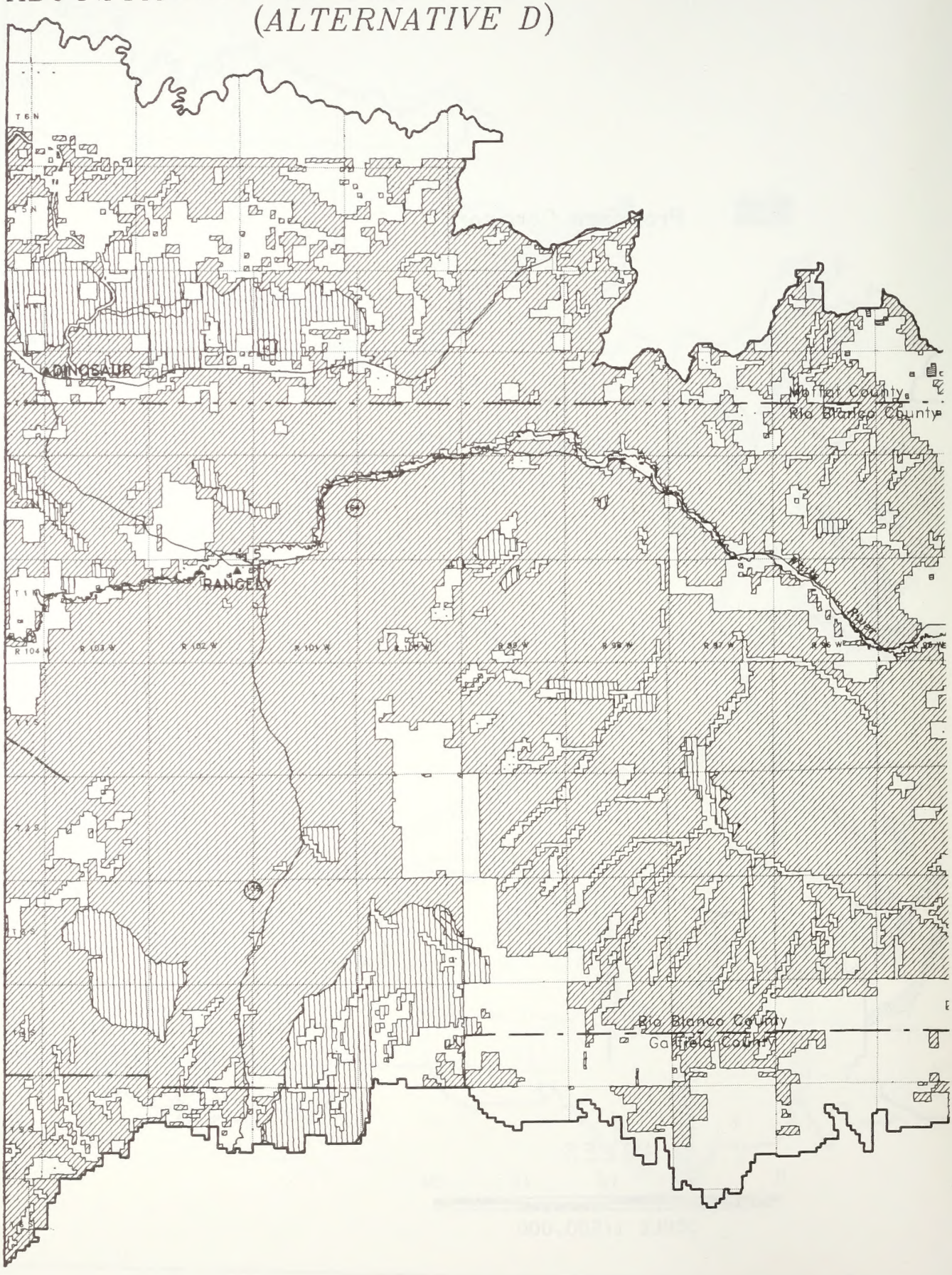
MAP 2–23. PROPOSED MAJOR UTILITY CORRIDORS (ALTERNATIVE D)

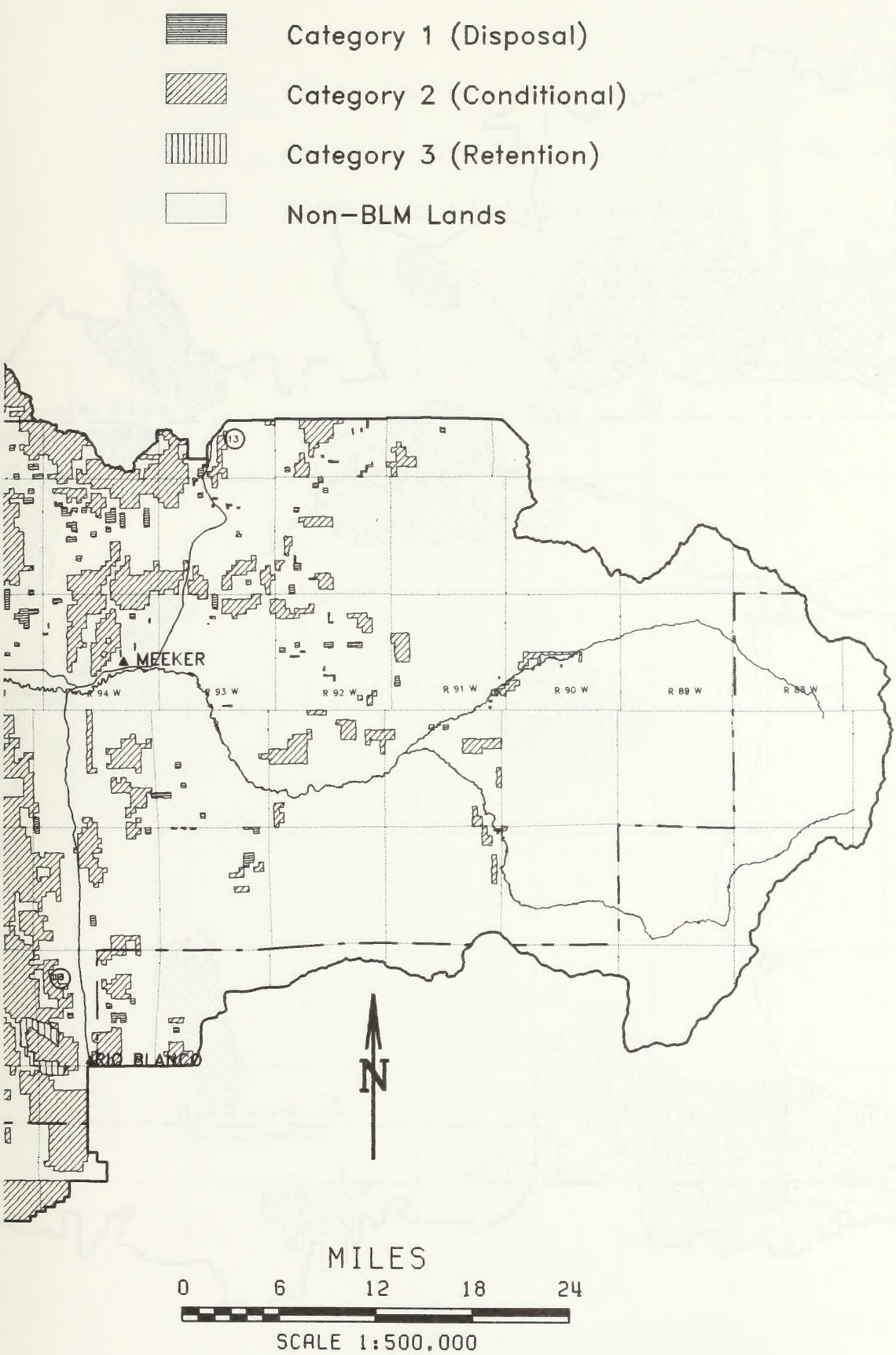



Proposed Corridor
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2-2

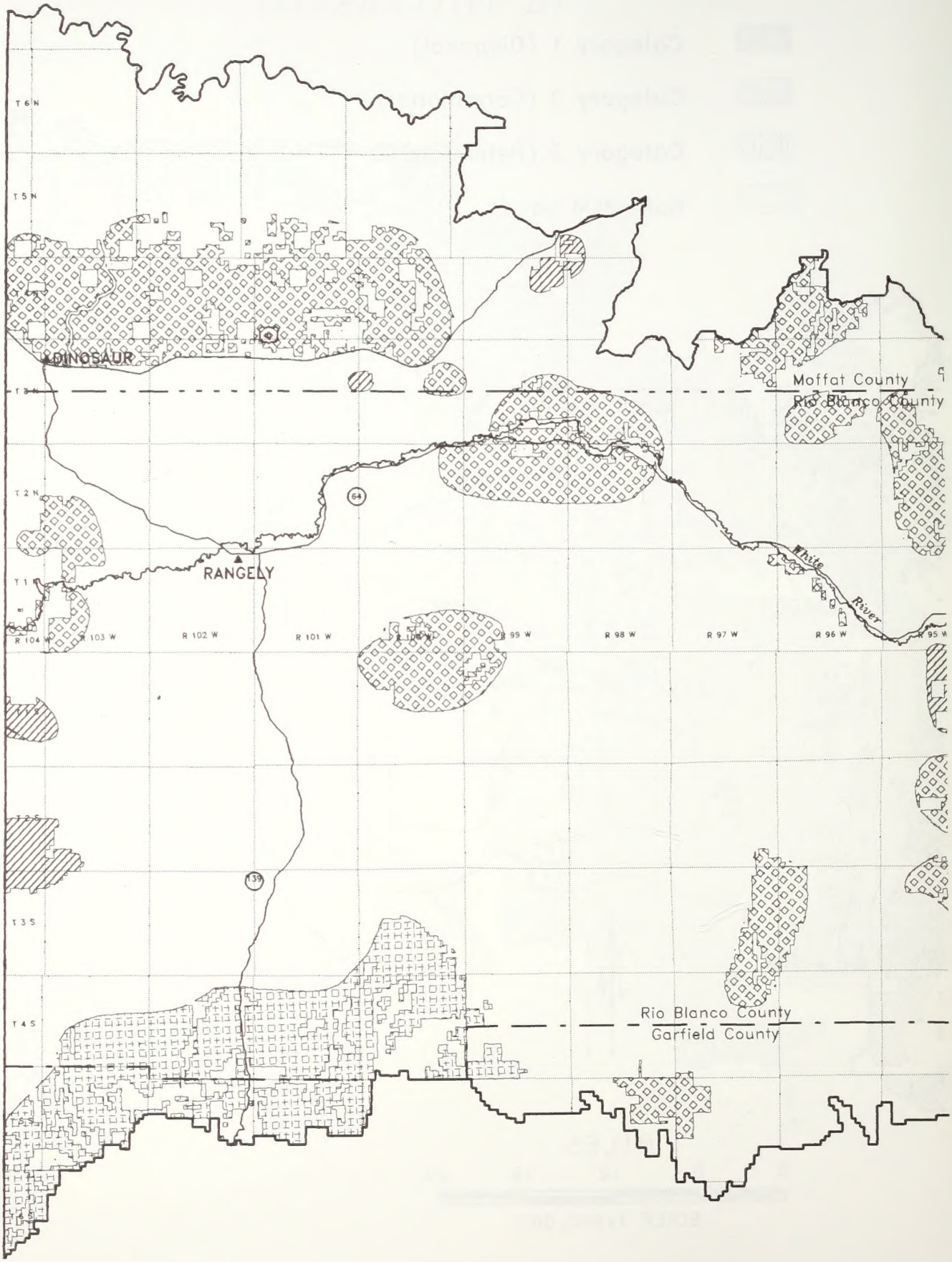
MAP 2-24. PROPOSED LAND TENURE ADJUSTMENTS ON BLM LAND (ALTERNATIVE D)




Category 1 (Disposal)
Category 2 (Conditional)
Category 3 (Retention)
Non-BLM Lands
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
RIO BLANCO
N
MILES
0 6 12 18 24
SCALE 1:500,000

MAP 2-2

MAP 2-25. AREAS NEEDING ENHANCED ACCESS (ALTERNATIVE D)

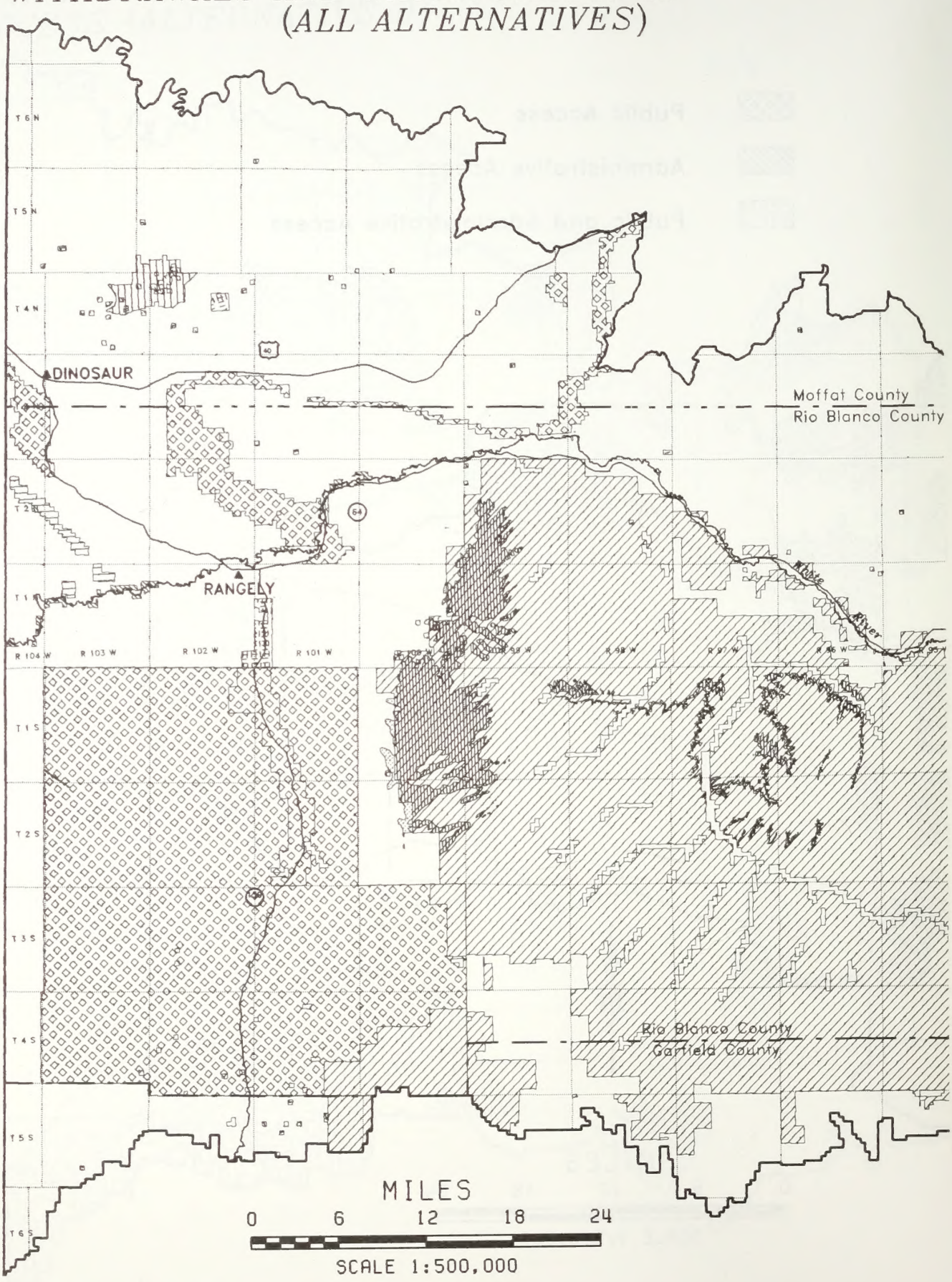


Plot files = PLT-WR.PIPA

Public Access
Administrative Access
Public and Administrative Access
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
N
MILES
0
6
12
18
24
SCALE 1:500,000

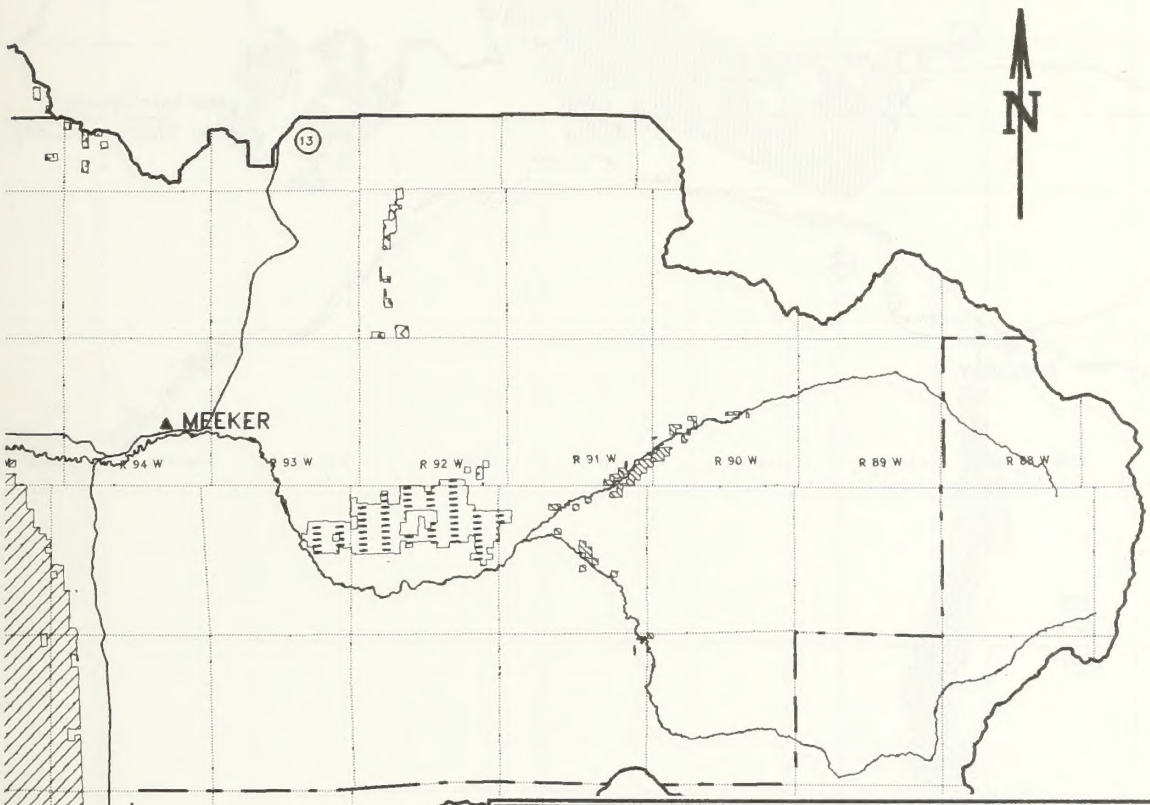
MAP 2-2

MAP 2-26. EXISTING AND PROPOSED WITHDRAWALS AND WATER RESERVES (ALL ALTERNATIVES)



Existing Withdrawals	Applicable Alternative			
	A	B	C	D
Oil Shale	X		X	X
Coal			X	
Classification & Multiple Use Act[1/]	X		X	
Water Reserves	X		X	X
Power-Related	X	X	X	X

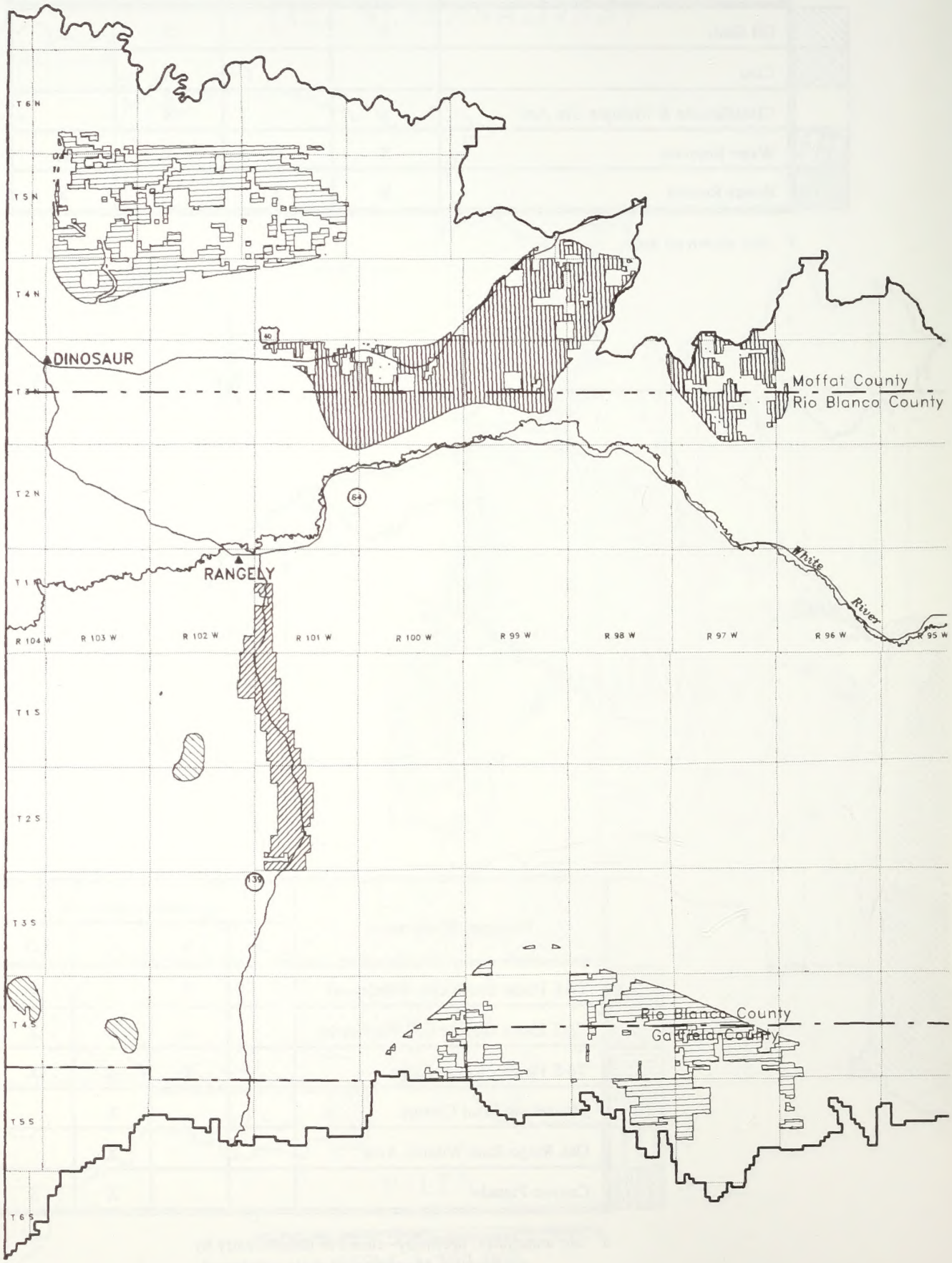
1/ Not shown on map

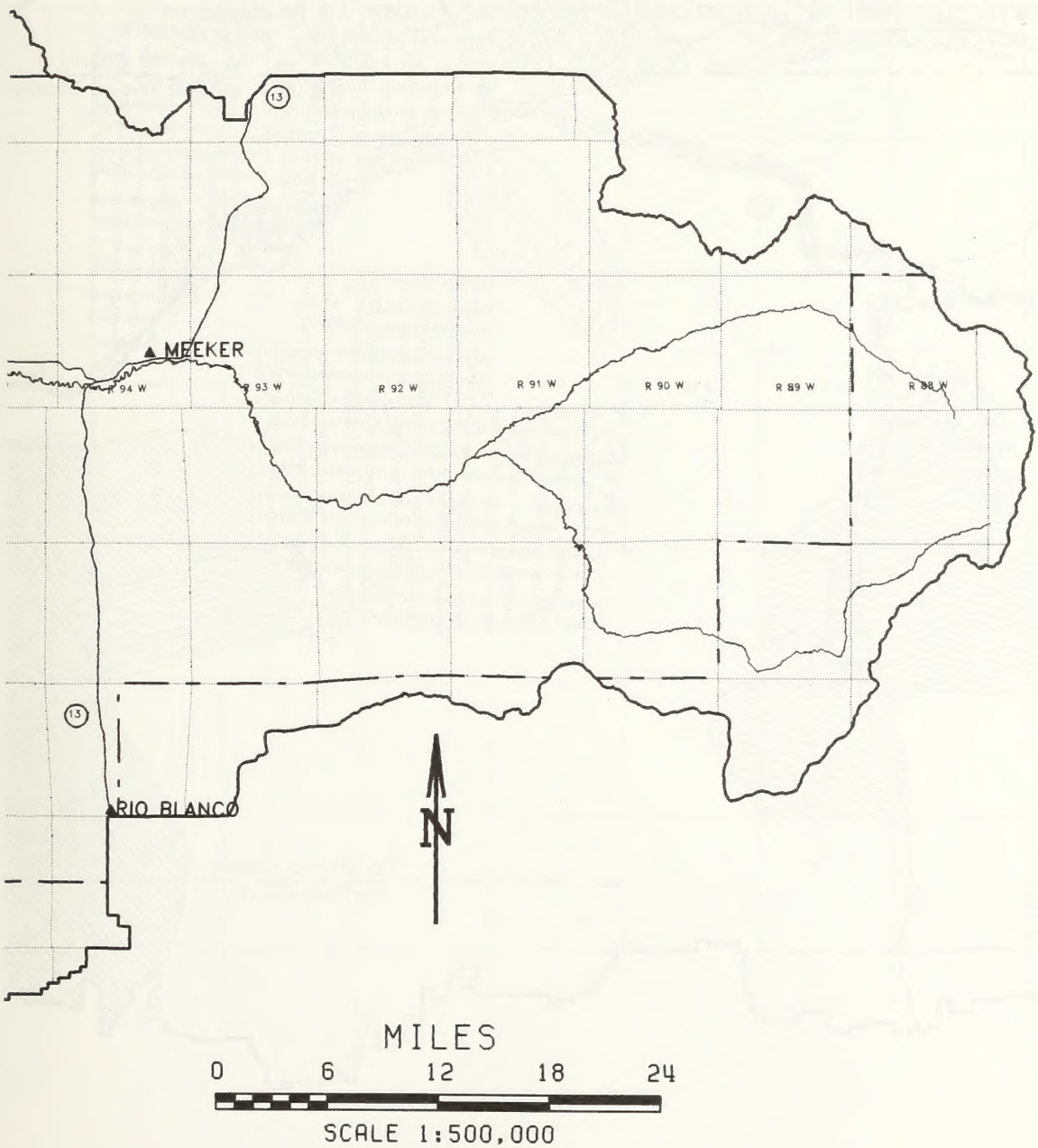


Proposed Withdrawals	Applicable Alternative			
	A	B	C	D
T&E Plants Inside O/S Withdrawal		X	1/	1/
T&E Plants Outside O/S Withdrawal		X	X	X
T&E Plants - Raven Ridge		X	X	X
Moosehead Road Closure			X	
Oak Ridge State Wildlife Area			X	
Canyon Pintado			X	X

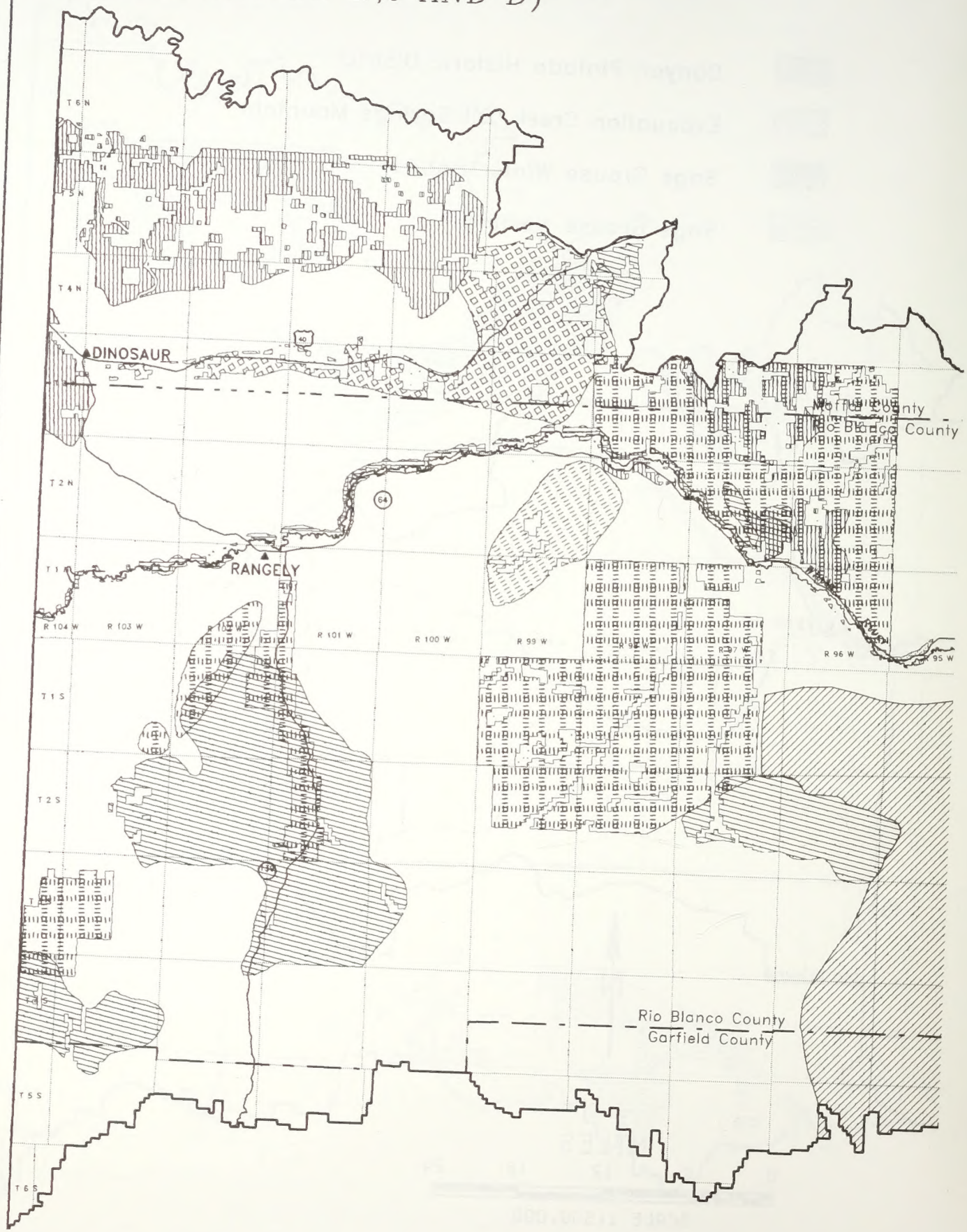
1/ No withdrawal necessary--closed to mineral entry by continuation of existing oil shale withdrawal

MAP 2-27. FIRE MANAGEMENT AREAS ON BLM LANDS (ALTERNATIVE A)




Canyon Pintado Historic District
Evacuation Creek/Oil Springs Mountain
Sage Grouse Winter Habitat
Sage Grouse Nesting
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 2–28. FIRE MANAGEMENT AREAS (ALTERNATIVES B,C AND D)



East Piceance Prescribed Natural Fire Area

Protection of Mature Cottonwoods

Protection of Unique/Remnant Floodplain Vegetation

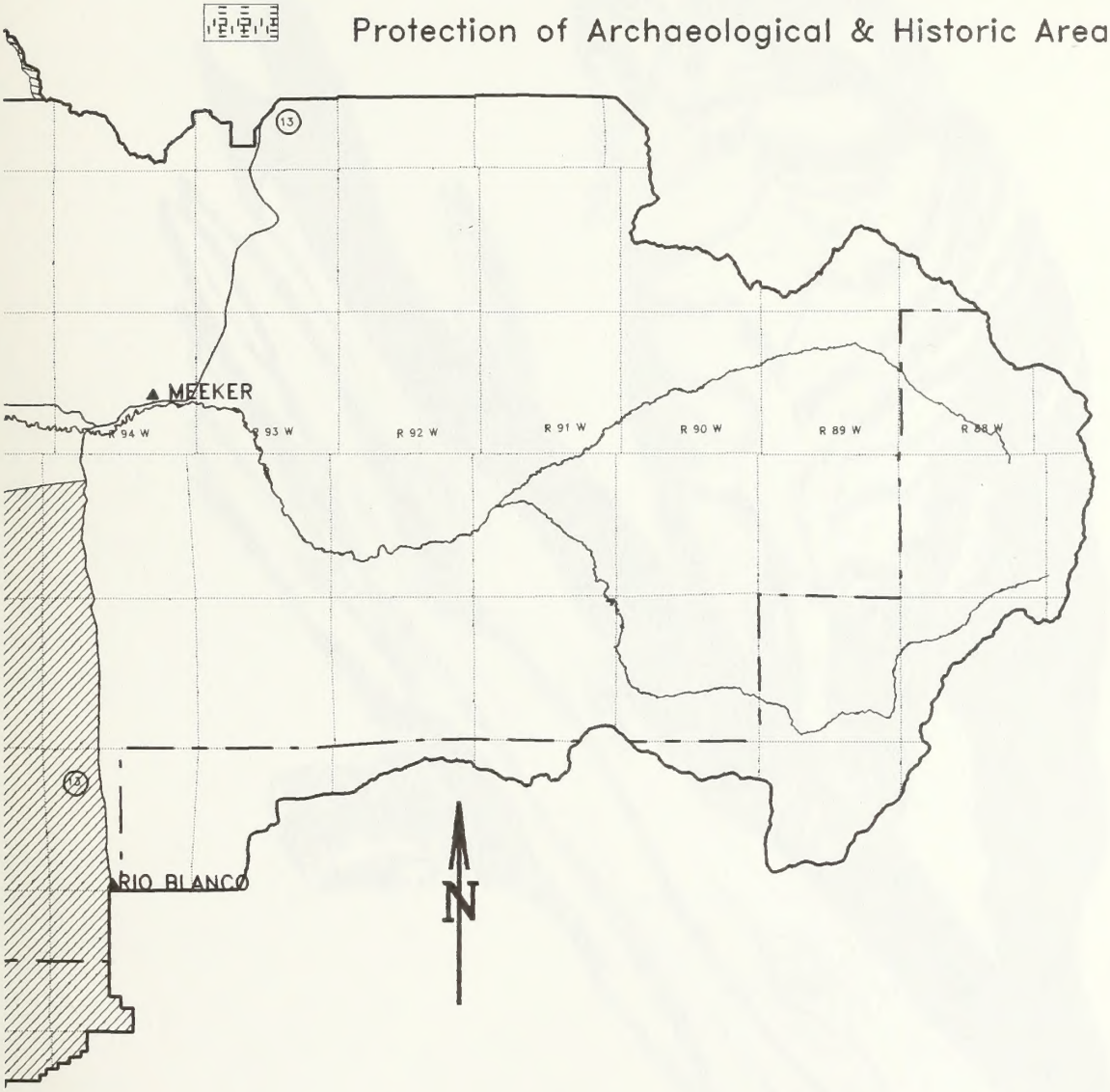
Protection of P–J in Deer Winter Range

Protection of Upland Sagebrush Stands

Limit Individual Burns in Sagebrush Type to 200 Acres

Protection of Oil & Gas Development

Protection of Archaeological & Historic Areas



MAP 2-28

CHAPTER 3
AFFECTED ENVIRONMENT

CHAPTER 3
AFFECTED ENVIRONMENT

This chapter describes the physical environment of the resources that would be affected by the BLM management actions proposed in Chapter 2. The information provided in this chapter is summarized. More detailed information is available at the White River Resource Area office in Meeker, Colorado.

AIR QUALITY

The existing air quality is typical of undeveloped regions in the western United States. Ambient pollutant levels are usually near or below the measurable limits. Exceptions include high, short-term localized concentrations of total suspended particulates (TSP) (primarily wind blown dust), ozone, and carbon monoxide. Locations vulnerable to decreasing air quality include the immediate operation areas around mining and farm tilling, local population centers affected by residential emissions, and distant areas affected by long-range transport of pollutants.

The entire resource area has been designated as either attainment or unclassified for all pollutants and most of the area has been designated prevention of significant deterioration (PSD) class II.

Portions of both the Flat Tops Wilderness (PSD class I/Colorado category I area) and the Dinosaur National Monument (PSD class II/Colorado category I area) are located within the resource area. In addition, the Mount Zirkel Wilderness (PSD class I/Colorado category I area) and the Colorado National Monument (PSD class II/Colorado category I area) could be influenced by activities within the resource area.

Currently, air quality is not being monitored; however, levels are estimated to be low and within standards. TSP concentrations are expected to be higher near towns and unpaved roads. Regional TSP levels are probably a result of fugitive (wind blown) dust.

Ozone levels in the Rocky Mountain West are relatively high but are of unknown origin. Elevated concentrations may be a result of long range transport from urban areas, subsidence of stratospheric ozone or photochemical reactions with natural hydrocarbons. Occasional peak concentrations of carbon monoxide (CO) and sulfur dioxide (SO_2) may be found in the immediate vicinity of combustion equipment.

PSD class I regulations also address the potential impacts on air quality related values. These values include visibility, odors, flora, fauna, soils, water, geologic, and cultural structures. A possible source of impact on these related values is acid precipitation. No visibility or atmospheric deposition data are currently collected in the resource area.

Visibility impacts occur from atmospheric increases in small, light-scattering particles or increases in light absorbing-gasses (typically nitrogen dioxide (NO_2)). Mechanisms of acid precipitation formation are currently under study, but results have correlated ambient sulfuric and nitric acids with combustion by-products (sulfates and nitrates).

Average annual concentrations (micrograms per cubic meter) in rural regions of the resource area range from 20 to 50 TSP; 1 to 10 SO_2; and 2 to 30 NO_2. Twenty-four hour average values range from 50 to 130 TSP and 10 to 30 SO_2. One-hour average concentrations range from 120 to 170 ozone, and from 1000 to 2300 CO. Average lead concentrations are less than 0.05 quarterly. Developed areas have nearly the same values with the following exceptions: 80 to 120 TSP annually and 115 to 300 TSP for 24 hours; 2 to 50 NO_2 annually; 1 hour CO values may reach 12,000.

CLIMATE

The resource area is located in a high valley/mountainous, continental climate regime characterized by dry air, sunny days, clear nights, variable precipitation, moderate evaporation, and large diurnal temperature changes.

The complex topography causes considerable variation in site-specific temperature, precipitation, and surface winds. Table 3-1 summarizes monitored values for temperature. Table 3-2 shows monitored values for precipitation and frost-free periods. Temperatures vary mostly with elevation. Summer temperatures usually range from lows in the upper 40's (degrees Fahrenheit) to highs in the 80's in the mountains and lower 90's in the western valleys. Daily winter temperatures typically range between zero degrees and the 30's. Extreme temperatures have been as low as -48 degrees (Little Hills in 1963) and as high as 104

degrees (Rangely in 1954). Freezing temperatures and snow accumulation are likely from October to April to lower elevations.

Annual precipitation ranges from less than 10 inches around Rangely to over 50 inches near Big Marvine Peak, east of Meeker with averages usually between 10-20 inches per year. Most precipitation comes from summer thunderstorms. The area typically accumulates from 30-50 inches of snowfall.

Upper level winds prevail from the southwest, but ground cover and terrain cause complex surface wind patterns. Persistent winds with little directional modification are found on the plateaus, but winds in valleys show strong drainage influences. Without strong pressure gradient flows, diurnal upslope/downslope wind predominate. Similar light diurnal winds occur along the White River.

Because of the complex terrain, dispersion is normally good in spring and summer but limited in the winter. Inversions are formed under stable conditions, trapping pollutants within a layer of air. Moderate summer inversions are typical during the evening and dissipate at dawn. Winter inversions are stronger and last longer. Inversions are enhanced by weak pressure gradients, cold clear nights, snow cover and lower elevations. Seasonal stability and mixing depth data are presented in Table 3-3.

Table 3-1. Site-Specific Temperature Variations

Station	Elevation (ft, Mean Sea Level)	Temperature (degrees F)				
		Extreme Minimum	Mean Minimum	Annual Mean	Mean Maximum	Extreme Maximum
Little Hills	6,140	-48	25	43	61	97
Marvine Ranch	7,343	-40	25	41	56	95
Meeker	6,242	-43	28	45	61	100
Rangely	5,216	-37	29	46	63	104

Table 3-2. Site-Specific Precipitation Variations

Station	Precipitation (Inches)				Frost-Free Period		
	Annual Mean	Monthly Maximum	Monthly Minimum	Mean Snow-fall	Days	Mean Begin Date	Mean End Date
Little Hills	12.9	1.7	0.7	52	59	6/23	8/21
Marvine Ranch	20. 5	2.2	1.4	179	35*	6/30*	8/4*
Meeker	17.5	2.0	1.1	87	91	6/11	9/10
Rangely	9.1	1.1	0.6	28	132*	5/14*	9/23*

Source: PEDCO Environmental, Inc. (1981)
*U.S. Department of Commerce (1985)

Table 3-3. Selected Atmospheric Dispersion Data

Season	Stability Frequency (Percent)						Approximate Mixing Depth	
	Morning			Afternoon				
	Un-stable	Neutral	Stable	Un-stable	Neutral	Stable	a.m.	p.m.
Piceance Basin [1]								
Annual	10	55	34	19	55	27	450	--
Winter	2	48	50	6	69	25	290	850
Spring	11	61	28	34	54	12	935	--
Summer	13	51	36	45	32	23	179	--
Fall	10	61	29	17	63	21	196	--
Craig [2]								
Annual	2	39	60	16	64	20	50	2300
Winter	0	43	57	6	65	29	300	1300
Spring	5	56	39	31	54	14	450	2900
Summer	0	21	80	14	66	20	350	3200
Fall	2	37	61	13	69	18	250	2000
Grand Junction [3]								
Annual	--	--	--	--	--	--	384	2600
Winter	6	33	62	3	51	47	329	1160
Spring	1	68	31	0	96	3	628	3166
Summer	0	57	43	0	98	2	307	3940
Fall	1	49	50	0	91	9	273	2133

Data Sources:
[1]Cathedral Bluffs Tract Stability Data: System Applications, Inc. (1982). Rio Blank Tract Mixing Depth Data: Gulf Oil Corporation (1976).
[2]Stability Data: System Applications, Inc. (1982). Mixing Depth Data (Statewide Average): PEDCO Environmental, Inc. (1981).
[3]Stability and Mixing Depth Data: System Applications, Inc. (1982)

TOPOGRAPHY

Most the resource area is located within the White River Basin. The White River flows west through the center of the resource area and provides a lush valley that extends from east of Meeker to the Utah State Line. Major drainages include Flag Creek, Big Beaver Creek, Little Beaver Creek, Strawberry Creek, Piceance Creek, Yellow Creek, Wolf Creek, Douglas Creek, Red Wash, Texas Creek, Missouri Creek, and Evacuation Creek. Most the drainages flow in a northerly or southerly direction and eventually join the White River. The northwest corner of the resource area is within part of the Yampa River Basin. Elevations range from over 8,500 feet near Nine Mile Gap on the northeast and the Roan Plateau on the southern boundary to approximately 5,200 feet where the White River passes into Utah west of Rangely.

Prominent features include Big Mountain, Sawmill Mountain, Uranium Peak, Yellow Jacket, Devil's Hole Mountain, Old Baldy Mountain, Colorow Mountains, Calamity Ridge, Cathedral Bluffs, Roan Plateau, Joe Bush Mountain, Segar Mountain, Grand Hogback, Tanks Peak, Lone Mountain, Moosehead Mountain, Texas Mountain, Oil Spring Mountain, Twin Buttes, the Flat Tops, Danforth Hills, Citadel Plateau, and Skull Creek Basin.

GEOLOGY

Three dominant geological structural elements are present: the White River uplift, the Piceance Creek Basin, and the Douglas Creek arch. Rock units represent a sedimentary column nearly 28,000 feet thick deposited since the end of Precambrian time.

The Piceance Creek Basin is a 1,600 square mile basin between the White River and the Colorado River. It extends about 55 miles north-south and 35 miles east-west. Tertiary rocks are exposed over much of the basin.

The Douglas Creek arch is the oldest geologic structure in the resource area because the Mesaverde Group of Late Cretaceous age and the Wasatch Formation of Eocene age thin toward and over the arch.

The Rangely anticline is a minor asymmetrical anticlinal structure at right angles to the northern part of the Douglas Creek arch and is easily observed at outcrops of the Mancos Shale and Mesaverde Formation.

SOILS

Soils are described in soil surveys conducted by USDA Soil Conservation Service. These include Rio Blanco County Area (1982), Moffat County Area (draft), Rifle Area (1984) and Douglas-Plateau Area (draft).

The semi-arid environment of the resource area has affected soil development. Lack of moisture, cool nights, and infrequent high temperatures suppress vegetation growth and slow the chemical and biological processes needed for good soil development. In addition, geologic erosion has progressed too rapidly for soils to develop distinct deep horizons. More than one-half of the resource area consists of soils less than 20 inches deep, and less than 5 percent of the soils have an argillic horizon.

Soils in some areas are high in sodium and other salts. A substantial acreage of soils are slightly to strongly saline at the surface or in a near surface subhorizon. These soils generally support a sparse vegetation cover of low salt tolerant desert shrubs, grasses, and cryptogamic lichens. They formed in alluvium, colluvium, residuum, and reworked eolian deposits derived dominantly from shale and sandstone. Because they lack continual moisture, these soils are dry, causing salts to precipitate at the surface as soil moisture evaporates. Runoff from these areas transports salt in solution and sediments contain undissolved salts that go rapidly into solution when they reach a major waterway. These soils are potential sources of additional sediment and salt to the Colorado River.

Excessive slope steepness increases the erosion potential of soils because it increases the rate at which water will flow overland and transport soil particles. The USDA Soil Conservation Service publications state that slopes of 20 to 35 percent contribute to a severe erosion hazard.

Approximately 171,808 acres of soils are highly susceptible to water erosion. The surfaces of these soils generally have a high portion of fine materials with little organic matter. Characteristic of these soils is slow permeability, low available water capacity, steep slopes, and shallow depth to rock, making runoff rapid.

Soils highly susceptible to wind erosion cover approximately 246,024 acres. These soils have many very fine sands and sandy loam and lack clay and organic matter. Permeability is usually rapid, and available water capacity is moderate.

Approximately 46,855 acres of soils are subject to flooding for some period. These soils occur along floodplains of major stream channels. In addition, many small drainages are subject to infrequent flash flooding during intense localized thunderstorms. Many of these drainages have deeply incised cutbanks.

Many soils in the western portion of the resource area are considered fragile. Of the 830,100 acres of fragile soil, 481,000 are on slopes exceeding 35 percent, 52,000 acres are saline, and 35,700 acres are subject to landsliding. These soils exhibit the following criteria:

1. Areas rated as highly or severely erodible by wind or water, as described by the Soil Conservation Service in area soil survey reports or as described by on-site inspection.

2. Areas with slopes greater than 35 percent, if they have one of the following soil characteristics: (a) a surface texture that is sand, loamy sand, very fine sandy loam, fine sandy loam, silty clay or clay, (b) a depth to bedrock that is less than 20 inches, (c) an erosion condition that is rated as poor, (d) a K (erosion potential) factor of greater than 0.32.

Badland areas are a worst-case example of fragile soils. They are steep, sparsely vegetated, shallow, high in salt concentrations, and often fine textured. The use of these particular soils are greatly limited by erosion hazard. Land sliding and other erosive phenomena may undercut structures, hinder construction, destroy roadbeds, and even pose safety hazards.

SURFACE WATER

The resource area lies within the Green River Basin, a tributary to the Colorado River. The major tributaries to the Green River are the White and Yampa Rivers. The White River originates in the White River Plateau and flows west to its confluence with the Green River in Utah. The river basin is approximately 107 miles long and averages 35 miles wide with a total land area of 3,680 square miles. Approximately 88 percent of the resource area contributes flow to the White River. Table 3-4 identifies the major subbasins and their acreage.

Table 3-4. Major Subbasins within the Resource Area

Major Subbasins	Acres in Resource Area	Acres on BLM Land
White River	2,350,100	1,372,200
Yampa River	193,300	43,300
Green River	39,700	22,000
Upper Colorado River	92,150	18,400
Total	2,675,250	1,455,900

Runoff from BLM-administered lands contributes little to the total water supply of the Green River Basin. Perennial streams receiving significant flow from lands administered by BLM are Piceance Creek, Yellow Creek and Douglas Creek. Other watersheds are generally lower elevation, semi-arid streams that are either intermittent, having segments of perennial flow near springs, or are ephemeral and flow during spring runoff and intense summer storms. Frequently these drainages are straight channels that are eroding in the upper reaches and agrading below. Channels are often deeply incised with steep banks that slough and develop new headcuts perpendicular to the main stem. A localized intense storm can erode upstream sediments deposited over a five to ten year period in one event. This could affect water quality by increasing sediment and salt yields, and accelerating erosion.

Annual runoff in the White River varies due to soils, vegetation, watershed aspect and slope, precipitation and temperature. Recorded annual runoff for the 1992 water year at the White River near Watson, Utah (USGS gauging station approximately 13 river miles from Colorado) was 379,200 acres feet and for the period of record (1924-1992) was 503,000 acres feet. Currently, agriculture accounts for the largest amount of water used in the basin. Other uses include municipal, industrial, domestic, recreation, wildlife, and livestock. Total consumptive use averages about 45,000 acre feet per year with 30,850 acre feet consumed for irrigation.

Natural flows to the White River are further modified by the operation of three principal reservoirs, Lake Avery, Rio Blanco Lake and Kenney Reservoir. Lake Avery and Rio Blanco Lake are off stream reservoirs administered by Colorado Division of Wildlife for wildlife and recreation values. Kenney Reservoir is also used for recreation and hydro-electric power. There are many smaller water developments on BLM land. These structures provide water for livestock and wildlife and help control erosion. Many have exceeded their capacity because of siltation and have problems with structural integrity. Monitoring and maintenance continues to be a high priority to keep these structures functional.

Surface water quality data is available for several sites on the White River, major tributaries, and many ephemeral drainages in the Piceance Basin through various USGS publications.

The Colorado Water Quality Division has recognized sediment and salinity as problems affecting several bodies of water. These sources have been ranked either low, medium, or high indicating the severity of the cumulative water quality impacts (see Table 3-5). The White River frequently carries elevated sediment concentrations that increase as the river moves downstream. Approximately 70 percent of the sediment yield is from sheet and rill erosion, and 30 percent is from channel and gully erosion (USDA SCS 1975). From Piceance Creek to the Colorado/Utah state line, salinity concentrations in the White River exceed 500 milligrams per liter (mg/l) in over one third of samples

considered (CNAR 1988). Soluble salts from the Mancos Shale Formation contributes the largest increases in salinity.

Table 3-5. Streams with Sediment and Salinity Water Quality Problems

Stream Name	Severity
White River below Meeker	High
Kenney Reservoir	High
Wolf Creek above White River	Low
Red Wash above White River	Medium
Douglas Creek	High
East Fork Evacuation Creek	High
West Fork Evacuation Creek	High
Soldier Creek	High

Table 3-6 displays stream reaches with corresponding salt loads in tons per year calculated using base and peak flow averages. Phosphorous concentrations are also elevated in this reach of the river. Phosphorous is abundant in sediments and is also a component of sewage.

Table 3-6. Drainage System and Salt Load in Tons/Year

Station Name	Base Flow	High Flow
White River above Coal Creek	15,000	192,800
White River below Meeker	138,000	385,200
Piceance Creek	41,500	71,900
Yellow Creek	3,100	11,250
Douglas Creek	5,000	150,700
White River near CO/UT State Line	234,200	710,700

The Colorado Department of Health, Water Quality Control Commission, has adopted (Colorado Department of Health 1991) basic standards and an antidegradation rule for all surface waters in the resource area. These standards reflect the ambient water quality and define maximum allowable concentrations for various water quality parameters. Most surface water segments on BLM lands are in the "use protected" category which states, at a minimum, all state surface waters shall be maintained and protected. No further water quality degradation is allowable that would further interfere with or become harmful to the designated uses.

Though riparian areas make up a small amount of the planning area (see Riparian Vegetation section, this chapter) they are hydrologically important. Riparian areas intercept sediment from uplands, attenuate flood flows and are the principal groundwater recharge areas for alluvial aquifers. Dense/vigorous riparian vegetation is critical for maintaining stable stream channels and high water quality.

GROUNDWATER

The geology of the area controls the occurrence, movement, and chemical quality of groundwater. Because nearly all of the rocks in the region are consolidated sedimentary formations (see Geology section, this chapter) their water-bearing properties are largely dependent on secondary porosity (faults, fractures, joints, etc.). These groundwater supplies are controlled more by recharge conditions than by use depletions. Recharge within the White River Basin occurs primarily at higher elevations where precipitation significantly exceeds evapotranspiration. Precipitation is the major recharge source in areas with an exposed permeable formation and an average annual precipitation in excess of 12 inches.

Groundwater occurs in both near-surface and deep aquifer systems. Near-surface aquifers include the alluvium along streams and the bedrock aquifers associated with hydrogeologic units. Warner, et al. divided the area into three major hydrogeologic units based on lithologic character and depositional environment: the Eocene Rock unit, the Mesaverde aquifer unit, and the Upper Cretaceous unit. The Mesa Verde unit can be one of the more productive aquifers in the resource area. The Upper Cretaceous unit contains formations that contribute most significantly to the salinity level of the Colorado River Basin.

The rate and quantity of groundwater movement primarily depends on hydraulic conductivity of the geologic formation and hydraulic gradient. Overall, the alluvium of the White River has the highest hydraulic conductivity of any formation in the resource area. It is generally less than 0.5 miles wide and ranges in thickness from 0 the 140 feet. Where saturated, alluvial aquifers are able to serve as a source of recharge to bedrock aquifers or a discharge point, hence, a stream-aquifer system that is typical of drainages in the planning area.

Chemical quality of groundwater is dependent on mineral composition and hydrologic properties of the aquifer. Factors such as surface contact, porosity, and rate of water movement will all help influence quality. Some sedimentary rocks contain large amounts of readily soluble minerals.

The abundance of these minerals together with low permeability will result in large

WATER DEPLETIONS

BLM-approved projects that are currently resulting in water depletions in the Upper Colorado River basin include impoundments, diversions, water wells/pipelines, spring developments, oils and gas use, and other. Category *other* includes water depletions for emergency actions such as wildfire, dust abatement on right of way construction, or other unanticipated uses.

In the past BLM has not been required to keep records of water depletions resulting from BLM-approved projects (both internally- and externally proposed); however, Table 3-7 show estimate, by type of project for the past 5-year period.concentrations of dissolved solids in the water (Warner, et al, 1985).

Table 3-7. Existing Water Depletions Resulting from BLM-Permitted Projects

Type of Project	Est. Annual Average (Ac-Ft)		Est. 10-year Total (ac-ft)
	BLM-Initiated	Proponent-Initiated	
Impoundments	0.17	0	.85
Diversions	-	-	-
Water wells/pipelines	0.1	-	.50
Spring developments	0.03	-	.15
Oil and gas use	-	43.1	215.5
Total	.30	43.1	217

*Based on a 10-year estimate

Spring inventories show 52 percent of the sampled springs have dissolved solid values less than 1,000 mg/l and 95 percent have dissolved solid values less than 5,000 mg/l. Saline springs occur in both the Mancos Shale and Green River Formation.

Groundwater has been developed and is used by private industry, ranching operations, and by the BLM for range and wildlife management. The quality of groundwater is highly variable, depending on the formation in which the aquifer is located and on the well location.

WATER RIGHTS

Water rights in Colorado are established and administered under a concept of water law called the Prior Appropriation Doctrine, or the rule of "First in Time, First in Right." In times of scarcity, the earliest appropriator has the first right to take water from the stream. Groundwater that is hydraulically connected to a stream is considered tributary. Most groundwater in Colorado is considered tributary and is therefore governed by surface water laws. Colorado is a pure appropriation state and is the only state requiring a decree from a special water court to perfect a water right.

BLM has one kind of reservation that applies to water rights called Public Water Reserves. These are the result of executive orders that reserved the 40 acres surrounding a spring or waterhole from homestead entry. The purpose of these reserves is to "prevent monopolization of BLM springs and water holes" and to provide domestic and stock water.

A total of 839 springs, seeps, and wells have been identified and inventoried within the resource area. These waters are important for satisfying livestock, wildlife, and recreational uses on BLM land. Table 3-8 lists those water rights secured by the BLM prior to 1992.

Table 3-8. Secured Water Rights

Type of Water Right	Number Secured
Reserved right on springs and water holes	121
Appropriative right on wells, reservoirs and stream segments	236
Absolute/conditional right on springs and seeps	376
Total	733

In Colorado, BLM will continue to claim water rights according to state law. Most of these claims will be for stockwater out of springs. Where instream flows are needed, BLM will make recommendations to the Colorado Water Conservation Board and work with interested parties to achieve mutual goals. The current emphasis is to perfect water rights on springs not included in BLM's previous adjudication of its reserved water rights.

OIL AND GAS

Oil and gas deposits are found throughout the resource area. The majority (2,508,800 acres) of lands within the resource area are classified as prospectively valuable for oil and gas (Map 2-8, Chapter 2). The prospectively valuable classification for oil and gas development is further refined to show high, moderate, low, or no potential. Approximately 1,941,550 acres (73 percent) have high potential, 99,930 acres (4 percent) have moderate potential, 467,330 acres (17 percent) have low potential, and 156,682 acres (6 percent) have no potential.

Coal bed methane potential is limited to those areas underlain by the coal-bearing Upper Cretaceous Mesaverde Formation within the prospectively valuable classification area. An estimated 535,060 acres (20 percent) are classified as high potential, 178,630 acres (6 percent) are classified as moderate potential, and 1,022.550 acres (38 percent) are classified as low potential. Industry sources indicate that coal bed methane reserves in the Piceance Creek Basin approach 84 trillion cubic feet (Western Oil World December 1989). In 1989, a total of 12,277,625 barrels of oil and 31,908,380 MCF of natural gas were produced from fields within the resource area. Table 3-9 shows cumulative production from selected fields within the resource area.

Most of the resource area's oil production is from the Rangely, Wilson Creek, and Nine Mile fields. Gas production is dominant along the Douglas Creek Arch and in the Piceance Creek Basin. Minor oil and gas production occurs in the Winter Valley and Elk Springs fields. Most of the gas reservoirs produce varying amounts of associated oil/condensate.

Table 3-9. Cumulative Oil and Gas Production of Selected Fields to January 1, 1990

Field	Oil (Barrels)	Gas (MCF)
Rangely	751,064,590	711,087,580
Wilson Creek	83,640,930	63,646,640
Nine Mile	1,089,030	310
Douglas Creek Arch[1/]	546,070	393,713,060
Piceance Basin[1/]	204,410	235,865,770
Total	836,545,030	1,404,313,360

The Rangely field is the largest oil field in Colorado. It produces oil and gas from formations at depths from 560 feet to more than 6,700 feet along the flanks and crest of the Rangely anticline. Oil is produced from the Weber Sandstone, the Salt Wash Sandstone, the Morrison Formation, and the Mancos Shale. Production declines have led to water flood and CO_2 injection programs in the Rangely Weber Sand Unit. The ultimate recovery of oil from the Rangely field will be close to one billion barrels of oil.

The Wilson Creek field, which is the second largest oil field in Colorado, is located about 10 miles north of Meeker. Oil production is from the Sundance and Morrison Formations and the Pennsylvanian Minturn Formation.

The Nine Mile field, east of the Wilson Creek field, is a small reservoir that produces from the Dakota Formation. Production in 1989 was 11,024 barrels of oil.

Oil production from the Douglas Creek Arch is minor; however, natural gas liquids are a major produce of gas production. Both oil and gas production come from structural and stratigraphic traps. Fault zones throughout the arch area allow migration of gas. These fault zones are generally targeted for drilling because of the increased porosity and permeability of the zone. The entire arch area is virtually one gas province although there are 28 fields named with production from eight different intervals.

Gas production from the Piceance Creek Basin is generally from small subparallel northwest-trending folds. The most prominent structural feature is the Piceance Creek anticline.

In 1989, a total of 12,277,625 barrels of oil and 31,908 MCF of natural gas were produced from fields within the resource area. Table 3-8 shows cumulative production from selected fields within the resource area. The production of oil in the White River Resource Area should continue to decline, as the Rangely and Wilson Creek fields are in their decline cycle. A falling off of production will occur though extensive use is being made of secondary and tertiary recovery methods. Most of the obvious structural plays in the resource area have already been drilled. Oil and gas exploration in the future will likely be concentrated on new interpretations of stratigraphic data. Oil and gas development is projected to be centered within and around existing producing fields.

Table 3-10 provides the current well status summary for the resource area. These summaries are generated quarterly and, except for new wells, the totals should not vary more than 5 percent.

Table 3-10. Well Status Summary

Type of Well and Status	Number of Wells
1. Estimated total wells drilled within the resource boundary (fee and federal)[1/]	3,230
2. Current usable federal wells (includes fee wells in federal units)[2/]	1,949
a. Capable of producing oil well	566
b. Capable of producing gas well	1,022
c. Service well (injection, disposal, monitoring, etc.)	361
3. All other federal wells not plugged and abandoned and down-hole abandonment)	232
4. Cumulative approved plugged and abandoned federal wells	1,010

Note: 1 well pad = 2 acres disturbance; 1 mile road = 22 acres of disturbance; average of 1/2 mile of road/well location = 1,370 miles.
[1/] Total wells taken from COGCC township plats (updated by White River Resource Area personnel)
[2/] Usable federal wells includes 450 wells on fee/fee within federal units.

To date, an estimated 14,580 acres of federal lands have been disturbed specifically for oil and gas development. Of this, an estimated 5,480 acres have been disturbed for well pads, 3,000 acres have been disturbed for road access to wells, and 6,100 acres have been disturbed for pipeline gathering and transportation systems. Of this acreage, an estimated 2,000 acres of well pad disturbance and 250 acres of road construction disturbance have been reclaimed to BLM standards. Pipeline reclamation usually begins immediately after the pipe is placed in the ground. Therefore, most of the pipeline construction has been reclaimed and is maintained to BLM standards.

OIL SHALE

The Green River Formation in the Piceance Creek Basin contains an estimated 1,200 billion barrels of shale oil. The Parachute Creek Member contains most the oil shale. The Parachute Creek Member is 900 to 1,200 feet thick at the southern and western margins of the basin and nearly 1,900 feet in the depositional center. The Upper Garden Gulch Member also contains some kerogen-bearing rock. The Mahogany zone (Parachute Member) consists of kerogen-rich strata and averages 100-200 feet thick. This zone extends to all margins of the basin and is the richest oil shale interval in the stratigraphic section.

Attempted development of the oil shale has occurred at prototype lease Tracts C-a (5,089.7 acres) and C-b (5,093.9 acres). The main oil shale interval under C-a is at 100-850 feet in depth and has an average overburden of 450 feet. Overburden varies considerably within the tract because of topographic relief but is generally thinner to the west. The tract was leased to show feasibility of open pit mining techniques; however, development to date includes only two in situ retorts.

Tract C-b was leased to be developed as an underground mining operation with above ground retorting of the oil shale. Three shafts were sunk to depths of 1,800 feet before economics and technology forced abandonment of initial plans. Both lease tracts are being maintained under an approved suspension of operations and production mode.

No mining method yet applied has provided a viable method for the profitable extraction of shale oil. However, with economic and potential crises bringing periodic renewed interest, oil shale will continue to be regarded as a valuable potential resource.

The Green River Formation west of Rangely is considered prospectively valuable for oil shale. However, the immediate development potential is minor because of the occurrence of thicker and richer deposits elsewhere in the Piceance Basin.

SODIUM

A thick zone of saline minerals is intermingled with oil shale in the depositional center of the Piceance Creek Basin. This saline zone consists mainly of nahcolite ($NaHCO_3$) and dawsonite ($NaA1\ OH_2\ CO_3$) and is confined to the lower part of the Parachute Creek Member. Map 2-9 (Chapter 2) shows the areal extent of the nahcolite and dawsonite in what is called the multimineral zone.

Approximately 222,843 acres are classified as prospectively valuable for nahcolite, and 121,164 acres are classified as prospectively valuable for dawsonite. The total nahcolite resource in the Piceance Creek Basin is estimated to be about 32 billion short tons. Dawsonite reserves in the Piceance Creek Basin are estimated at 19 billion tons. However, dawsonite is not in demand now. The Piceance Basin also contains an estimated 6.5 billion tons of potentially extractable alumina.

Eight federal sodium leases, containing 16,560 acres, are located contiguous to one another, near the center of the saline zone (Table 3-11). Approximately 7.2 billion tons are currently under lease. Development from a pilot scale solution mine on one of the leases is currently proceeding at

a rate of about 6 tons of nahcolite per hour. No development is planned for the remaining leases. All 8 sodium leases have a lease stipulation that precludes mining methods that would cause irreparable damage to the overlying or commingled oil shale resource. This stipulation combined with a lack of an adequate market for the nahcolite has retarded the sodium industry in the Piceance Creek Basin.

Table 3-11. Existing Sodium Leases

Lease Number	Acres
CO119985	1,320
CO119986	2,380
CO118326	2,160
CO118327	2,483
CO118328	2,402
CO118329	2,533
CO120057	2,187
CO37474	1,200
Total	16,685

COAL

The Danforth Hills field north of Meeker and the White River field near Rangely are classified as prospectively valuable for coal. The principal coal-bearing sequences are found in the Mesaverde Group; however, there are stratigraphic changes between the Meeker and Rangely areas that affect the coal reserve base.

In the Danforth Hills field, the Mesaverde Group consists of the Iles Formation (1,500 feet thick) at its base and the William Fork Formation (5,000 feet thick). The individual coal beds within the coal groups in both formations are discontinuous and are very difficult to correlate laterally. All these coals are noncoking and are generally high-volatile C bituminous in rank.

Coal resources were calculated based on criteria that included all coal beds over 5 feet thick, to a depth of 3,000 feet. The recoverable coal reserves for the Danforth Hills field within the White River Resource Area is estimated at 416,397,000 tons, exclusive of existing federal leases. The total coal reserves estimated for the White River field is 327 million tons.

The 1981 Coal Amendment to the *White River Management Framework Plan* identified 172,695 acres of lands containing high or moderate coal development potential in these two areas. Lands of low and unknown coal development potential were excluded from further consideration in that document. That plan made no land use decision for coal development would be made outside the identified study areas.

Ten federal coal leases in the Danforth Hills field have been issued. Two outstanding preference right coal lease applications (PRLAs) cover approximately 5,579.31 acres. Seven federal coal leases and one PRLA have been issued in the White River field. Total reserves under lease within this field are approximately 71 million tons.

Currently, the underground Deserado Mine near Rangely is the only operating mine in the resource area. The recoverable coal reserve base for the seven coal leases in the mine area is estimated at 67 million tons. The average yearly production rate is approximately 1.3 million tons per year. One outstanding coal PRLA containing approximately 6,236,000 tons has been issued in the White River field.

MINERAL MATERIALS

Sand and gravel deposits are found along parts of the White River and along some of its larger tributaries. Colluvial deposits can be found at the base of rock outcrops and within alluvial fans. Both sand and gravel and general purpose rock material are used extensively for road construction and maintenance. Local demand for sand and gravel for use as a building material, road construction, and maintenance is very high in the Rangely area.

Potential building stone and riprap material are located throughout the resource area. Nearly all resistant rock formations are a potential source of stone and riprap. The main consideration in their use is the cost of development and transportation from source to place of use. Clay deposits can be obtained from various rock intervals within the Wasatch Formation and Mesaverde Group.

Low grade asphalt and tar sand deposits are present in thin and discontinuous layers between sandstone beds of the Lower Green River Formation. These deposits are also not considered economically extractable.

LOCATABLE MINERALS

Rock formations in the White River Resource Area are of sedimentary origin and are not considered a likely source of economically significant locatable minerals.

Clastic sedimentary deposits usually contain common varieties of sand and gravel and other locatable minerals. Uncommon varieties of clastic sedimentary deposits subject to location under the general mining laws are probably not present in the resource area.

Chemical sedimentary deposits include the Mississippian limestones, gypsum in the Pennsylvanian, Morrison and Wasatch Formations, and saline deposits in the Green River Formation. The Mississippian limestones are exposed in the northwest corner of the resource area near Dinosaur National Monument and in the White River uplift in the eastern part of the resource area. However, these limestones are usually dolomitic, and no interest has been shown for their development. The gypsum deposits are usually thin, have been extensively dissolved by groundwater and are considered of little value. The saline deposits of the Green River Formations are addressed under sodium resources.

Deposits of uranium-vanadium ore, sometimes with associated copper, have been exploited in some areas. Copper-uranium-vanadium ore was discovered in the 1950's in a basal sandstone of the Curtis Formation, and uranium has been found in the Weber Sandstone near the Skull Creek anticline. The ore is apparently confined to the thin-bedded sandstone unit between the eolian Entrada Sandstone and an overlying marine fossiliferous sandstone. The ore mineral is disseminated in the host sandstone and concentrations occur along zones containing carbonized plant fragments.

Low grade uranium without apparent associated vanadium or copper occurs in coal beds in the Mesaverde Group a few miles south of the Skull Creek area. Distribution of uranium in the coal is unknown.

Uranium ore bodies occur in the Morrison Formation of Jurassic age and in the Upper Triassic formations on the northwest flank of the White River uplift east of Meeker.

Prior to 1920, thousands of oil shale claims were staked in the Piceance Basin. The validity of many oil shale claims has been in question and has been the subject of prolonged litigation between the BLM and the claimants or their successors. In 1987, 85,500 acres of oil shale claims held by TOSCO and others were ruled valid by a federal court, and the BLM was ordered to patent the lands. In 1991, 983 acres of oil shale claims held by Marathon were ruled valid, and the BLM again was ordered to patent the lands. Another 189 oil shale claims covering 29,300 acres in Colorado are still pending patent action. In 1991, Congress placed a moratorium on further oil shale claim patents pending review and possible legislation to change oil shale related patents.

The Mantle-Jamison mining area is a concentration of abandoned mines and prospects adjacent to the southern boundary of Dinosaur National Monument. Small amounts of lead and zinc ore were removed from small fissure veins in the Mississippian age sediments.

Occasional mining activity has occurred in the vicinity of the Skull Creek anticline for uranium and vanadium.

The Uranium Peak District was a uranium-producing area. Total production from the district is probably less than 10,000 tons; although, several ore bodies that could double this figure have been identified. Uranium mineralization was known in this area as early as 1905. After World War II both uranium and vanadium were mined from the resource area. No active mining or development is currently taking place in this resource area.

PLANT COMMUNITIES

The native plant communities can be described by major plant associations that are characterized by one or two dominant plant species or an association of several dominant plant species. Distribution of these associations is influenced primarily by precipitation and elevation and, to a lesser extent, by aspect and soil type. Table 3-12 lists these associations by acres of each association on BLM lands and by the percentage of the total BLM land acreage occupied by each.

GRASSLAND ASSOCIATION

Grasslands consist of a perennial grass type intermixed with forbs, half shrubs, occasional browse species, and annual grasses and noxious plants when in a deteriorated condition. Native grasslands generally occur as scattered patches on windswept ridgetops, uppermost south slopes, and on deeper soils in valley bottoms. Grassland areas created by vegetative manipulation and wildfire are also considered in this association. The type covers 5 percent of the resource

area. Available moisture (as influenced by elevation, soils, and topography) is probably the dominant factor influencing species composition, density, and diversity.

Stands at elevations below 7,000 feet generally exhibit lower plant densities and species diversity. Associations at lower elevations are dominated by grasses adapted to xeric conditions such as Colorado wildrye, Indian ricegrass, squirreltail, western wheatgrass and Sandberg bluegrass. Abundance and diversity of forb species are more limited than in grasslands at higher elevations. Saltbush species are commonly scattered throughout the type where it occurs on saline-alkaline soils. Big sagebrush is actively invading the type at all elevations.

Grasses adapted to mesic conditions are more common at elevations above 7,000 feet. Dominant species include subalpine and Letterman needlegrass, Kentucky bluegrass, big bluegrass, slender wheatgrass, and some bromegrasses. Associated shrubs and forbs include big sagebrush, black sagebrush, mountain shrub browse species, arrowleaf balsamroot buckwheat, and penstemons.

GREASEWOOD ASSOCIATION

The greasewood type is typically dominated by dense stands of greasewood (*Sarcobatus vermiculatus*), 2 to 5 feet in height. Understory growth in dense stands is usually very sparse, consisting primarily of low growing annual grasses and forbs. Open stands support a mixture of perennial shrubs and have a perennial and annual grass-forb understory.

The greasewood association is limited primarily to low elevation drainage bottoms that have deep, saline-alkaline, poorly drained alluvial soils. The type is intermixed with saltbush and sagebrush on lower saline-alkaline soils. Wolf Creek, Douglas Creek, Red Wash, Stinking Water Creek, Yellow Creek and the White River are drainages occupied by extensive greasewood stands. The type covers about 0.4 percent of the resource area, ranging from about 5,200 to 6,600 feet in elevation.

SALTBUSH ASSOCIATION (SALT DESERT SHRUB)

The saltbush type consists of mixed stands of low growing shrubs dominated by saltbush and sagebrush stands. Areas in good condition are occupied by a diverse perennial grass and forb complex. Stands in deteriorated condition support substantial infestations of annual grasses and noxious plants. This vegetation type is comprised of various distinct and intermixed subtypes with differing species composition and density. Exclusive stands of mat saltbush and Gardner saltbush occupy some sites while other sites support mixtures of all saltbush species and perennial grasses.

The type is mainly found in low precipitation zones below 6,000 feet in elevation. It is restricted to semi-arid climatic conditions and is at a competitive disadvantage with sagebrush and greasewood in higher moisture regimes because the latter species' has a deeper root system.

Typical stands occur north of the White River in Coal Oil and Coal Creek Basins. The type occupies saline-alkaline soils in semi-arid basins and foothills at lower elevations. The type covers about 4.0 percent of the resource area.

The dominant ecological factors affecting the distribution of the saltbush association are available moisture, soils and grazing use patterns.

Table 3-12. Present Plant Community Succession on BLM Lands

Plant Community	Plant Community Successional Stage						Percent
	PNC	Late-Seral	Mid-Seral	Early-Seral	Not Classified	Total	
BLM Lands							
Grassland	4,473	31,314	38,790	0	0	74,577	5.0%
Sagebrush	9,212	55,272	218,017	24,565	0	307,066	21.0%
Mountain shrub	11,326	77,664	71,192	1,617	0	161,799	11.0%

Table 3-12 continued

Plant Community	Plant Community Successional Stage						Percent
	PNC	Late-Seral	Mid-Seral	Early-Seral	Not Classified	Total	
Greasewood	54	53	1,597	3,620	0	5,324	0.4%
Salt desert shrub	64	10,829	41,405	11,402	0	63,700	4.0%
Riparian/wetland	0	0	0	0	968	387	0.03%
Pinyon/Juniper	93,848	301,653	207,805	67,034	0	670,340	46.0%
Aspen	295	3,025	3,910	147	0	7,377	0.5%
Douglas-Fir	9,650	13,510	965	0	0	24,125	2.0%
Spruce fir	2,581	3,613	258	0	0	6,452	0.4%
Lodgepole	295	413	30	0	0	738	0.05%
Barren land	0	0	0	0	67,652	67,652	5.0%
Rock outcrop	0	0	0	0	54,688	54,688	4.0%
Surface Water					184	184	0.01%
Irrigated	0	0	0	0	237	237	0.01%
Unknown	0	0	0	0	8,778	8,778	0.06%
Total	131,798	498,576	585,513	108,439	131,539	1,455,865	
Percent	9%	34%	40%	8%	9%	100%	
Naval Oil Shale Reserves							
Grassland	0	115	0	0	0	115	3.0%
Sagebrush	0	700	847	0	0	1,547	39.0%
Mountain shrub	0	1,623	0	0	0	1,623	41.0%
Wetland	0	0	81	0	0	81	2.0%
Aspen	0	494	0	0	0	494	12.0%
Rock outcrop	---	0	0	0	142	142	3.0%
Total	0	2,932	928	0	142	4,002	
Percent	0	73%	23%	0	4%	100%	

Note: Based upon professional judgement of specialists trained in classification of plant community succession.

SAGEBRUSH ASSOCIATION

The sagebrush type is a mixed low to high growing shrub community dominated by various sagebrush species. The overstory varies from open to completely closed stands with understory species density and diversity inversely related to overstory closure. The type occurs at all elevations and covers over 21 percent of the resource area.

The association is influenced by many interacting and independent ecological factors, mainly climate, soils, topography, fire history, and grazing history. Available moisture, as influenced by elevation, affects both overstory and understory species composition. Stands below 7,000 feet are generally dominated by big sagebrush. Some areas support a shadscale or winterfat component, or both. Stands above 7,000 feet are commonly mixed with mountain shrub associated species. Herbaceous species adapted to xeric conditions at lower elevations include squirreltail, Indian ricegrass, Colorado wildrye, needle-and-thread, goldenweed, and scarlet globemallow. Mesic conditions at higher elevations typically support wheatgrasses, bluegrasses, needlegrasses, bromegrasses, arrowleaf balsamroot and penstemons. Some species, associated with this type, exhibit broad environmental tolerances, typically: western wheatgrass, needle-and-thread, and Sandberg bluegrass.

MOUNTAIN SHRUB ASSOCIATION

The mountain shrub type is a mixture of large- to medium-sized tree-like shrubs that have a mixed understory of new growth shrubs, grasses, and forbs. The overstory varies from open to dense stands and understory species density and diversity reflects an inverse relationship to overstory closure. In some areas, the type appears to support the highest herbaceous production and species diversity of any plant association.

The association occupies higher elevation on east, west, and north slopes but extends into lower elevations on cool exposures and comprises about 11 percent of the resource area. The primary environmental factor affecting the mountain shrub associations is available moisture, as influenced by elevation, soils, topography, and wildfire. The type is largely restricted to elevations about 7,000 feet in higher precipitation zones. Species composition and density is diverse despite its restricted altitudinal

distribution. Below 7,000 feet on deeper well drained soils, the type commonly intergrades with the sagebrush association.

PINYON/JUNIPER ASSOCIATION

The pinyon/juniper vegetation type is a broad classification covering several associations of pinyon pine (*Pinus edulis)* and various western junipers. The primary juniper species found in the resource area is Utah juniper (*Juniperus utahensis*). The type characteristically occurs on xeric ridgetops with shallow soils. It apparently has a competitive advantage over other vegetation types and is the climax association on these sites.

The pinyon/juniper association varies from an open to closed overstory of woodland conifers supporting highly variable understory shrub and grass-forb production. Understory production generally varies inversely with overstory closure. The type exists on a wide range of soils, elevations and exposures and is limited primarily by semi-arid or cool-mesic climatic conditions and saline-alkaline soils. The type is found from about 5,200 to 8,000 feet corresponding to a general precipitation range of 10 to 20 inches per year. About 46 percent of the resource area involves this association.

ASPEN ASSOCIATION

The aspen type consists of open to dense stands of deciduous trees in small isolated pockets in higher elevations on northern exposures and protected slopes. Understory vegetative production generally varies inversely with overstory closure. Dense stands support a thick understory complex of browse and aspen reproduction with limited herbaceous vegetation. More open stands support higher production and diversity of grasses and forbs. The type occupies less than 5 percent of the resource area.

The association is restricted to elevations above 7,000 feet on cool moist sites (northern exposures). It is common to many soil types, from moist loamy sands to rocky shallow soils and clays. Available moisture appears to be the primary factor controlling the extent and distribution of the type.

CONIFER ASSOCIATION

The conifer vegetation type is a broad classification covering several types. The major overstory species are spruce, pine, or fir trees in mixed or nearly pure stands. This type comprises about 3 percent of the resource area and consists

of isolated pockets of coniferous trees growing at elevations above 6,000 feet.

The conifer type is highly variable. Both overstory and understory species vary according to soils, moisture availability, aspect, temperature, elevation, and many other factors. Soils supporting conifer stands in the resource area range from very rocky, shallow soils on ridges and points to deep sandy soils in drainage bottoms. Aspect affects density, productivity, and type composition at all elevations. The north and east facing slopes usually have denser and more varied vegetation.

BARREN/ROCK OUTCROP ASSOCIATION

Barren lands are those areas such as barren rock, erosion pavements, rock outcrops, cliffs and talus slopes that have no or only sparse vegetation. Waste lands are areas too steep and/or rocky to be beneficial to livestock or big game animals. This classification covers 9 percent of the resource area. Many endemic, rare plant species in the resource area occur on the barren lands.

NOXIOUS OR PROBLEM WEEDS

Noxious weeds and their continued encroachment on BLM lands represent a serious threat to the continued productivity, diversified use and aesthetic value of White River Resource Area BLM lands. Principal target noxious weed species and their current (1993) estimated acreage of infestation are listed in Table 3-13.

An active noxious weed management program emphasizes cooperation with Rio Blanco County, private landowners and BLM land users. Existing management is based in part on the 1990 White River Resource Area Noxious Weed Management Plan and the priorities established by he ROD, Vegetation Treatment on BLM Lands, 13 Western States. The principal direction of the program has been: (1) chemical control using primarily picloram and dicamba and (2) insect biological control releases focused on leafy spurge, musk and Canada thistles. Both aspects of the program have been effective where they have been applied.

Table 3-13. Noxious Weed Species and Level of Infestation

Species	Known Acreage of Infestation (acres)
1. leafy spurge (*Euphorbia spula*)	170
2. houndstongue (*Cynoglossum officinale*)	2,110
3. knapweeds: Russian, spotted and diffuse (*Acroptiliion repens, Centaurea maculosa, C. diffusa*)	10
4. musk thistle (*Carduus nutans*)	15
5. Canada thistle (*Cirsium arvense*)	150
6. yellow toadflax (*Linaria vulgaris*)	160
7. whitetop/hoary cress (*Cardaria draba*)	10
8. tall whitetop/perennial pepperweed(*Lepidium latifolium*)	10
Total	2,635

RIPARIAN VEGETATION

Riparian vegetation is generally associated with small, perennial streams, man made reservoirs and stock ponds holding year-round waters, and spring sources. Riparian plant communities or zones are typically narrow bands that follow stream courses and are very distinct from other rangeland plant communities. The importance of these communities is that a given number of acres supports higher population densities and greater diversity of species of both plants and animals than any other rangeland plant community.

Table 3-14 summarizes the acres by functional condition of riparian vegetation on BLM land by geographical reference area. Very little inventory has been completed on riparian areas within the resource area. Acreages and conditions given in Table 3-14 are only estimates based upon professional judgements of BLM personnel. Refer to Chapter 2, Riparian Management Section, for listing of riparian habitats by geographic reference area (GRA).

Table 3-14. Estimated Functional Condition by GRA

GRA	Public Land Acres		
	Proper Functioning Condition	Functional At Risk	Nonfunctional
Piceance Basin	1.0	146.7	65.8
Blue Mountain/Moosehead	0	44.8	1.7
Wolf Creek/Red Wash	11.9	5.9	31.7
Douglas Creek/Cathedral	60.5	412.9	40.5
Crooked Wash/Deep Channel	0	17.8	2.9
Danforth Hills/Jensen	2.0	5.9	0
White River	0	116.0	0
TOTALS	75.4	735.7	142.6
Percent of Total	8%	77%	15%

THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES

Habitats have been inventoried for 19 plant species (Table 3-15) that are either rare and endemic or rare and are considered as a BLM sensitive species. Many of these sensitive species are endemic to the Green River geologic formation. This formation is limited to the Uintah Basin of Utah and the Piceance Basin/Roan Plateau of Colorado.

Of the 19 plant species listed in Table 3-15, all are rare in Colorado, and 11 occur only in the resource area and nowhere else in the state. The other six species are considered sensitive species because of limited habitat and distribution though the plants are common on that habitat.

Two of the species are listed as threatened under the *Endangered Species Act* and two are candidates for listing as either threatened or endangered species. Seven species are rare throughout their range of distribution. Two of these and most of the habitat for a third occur entirely within the resource area. The only Colorado occurrences of three other species are within the resource area.

Lesquerella congesta (LECO) and *Physaria obcordata* (PHOB) are only known to occur in the resource area. Both species were listed as threatened species under the *Endangered Species Act* effective March 8, 1990, because of their rarity and limited distribution (*Federal Register 55CFR 4152*). LECO is restricted to exposures of the Thirteen Mile Tongue of the Green River Formation along knolls and ridge crests that are generally under 15 percent slope along Piceance Creek and Yellow Creek and their tributaries. PHOB is restricted to exposures of the Thirteen Mile Tongue of the Green River Formation where slopes of the exposure are barren, loose scree and generally exceed

Table 3-15. Rare and Sensitive Plant Species

Species	Common Name	Federal Status[1]	State List[2]	Area
Aquilegia barnebyi	Shale Columbine	3C	4	Deer Gulch Area of Critical Environmental Concern (ACEC)[3] Raven Ridge ACEC Yanks Gulch ACEC

Table 3-15 continued

Species	Common Name	Federal Status[1]	State List[2]	Area
Astragalus detrilalis	Debris Milkvetch	3C	2	School Gulch
Astragalus lutosus	Dragon Milkvetch	3C	4	All ACECs
Cryptantha rollinsii	Rollins Cat's Eye	-	2	Raven Ridge ACEC
Eriogonum ephedroides	Ephedra Buckwheat	3C	2	Raven Ridge ACEC
Festuca dasyclada	Utah Fescue	3C	4	Deer Gulch ACEC
Gentianella tortuosa	Utah Gentian	-	2	South Cathedral Bluffs ACEC
Gilia stenothyrsa	Narrow-Stem Gilia	-	2	Lower Greasewood ACEC
Lesquerella congesta	Dudley Bluffs Bladderpod	T	1	Dudley Bluffs ACEC
Lesquerella parviflora	Piceance Bladderpod	3C	1	Deer Gulch ACEC South Cathedral Bluffs ACEC Upper Greasewood ACEC
Oenothera acutissima	Narrow-Leaf Evening Primrose	3C	1	-
Parthenium ligulatum	Ligulate Feverfew	3C	2	Raven Ridge ACEC
Penstemon albifluvis	White River Penstemon	1	1	Raven Ridge ACEC
Penstemon grahamii	Graham Beardtongue	1	1	Raven Ridge ACEC
Penstemon yampaensis	Yampa Beardtongue	3C	4	-
Phacelia incana	Hoary Phacelia	-	3	Raven Ridge ACEC
Physaria obcordata	Piceance Twinpod	T	1	Dudley Bluffs ACEC, Yanks Gulch ACEC
Sullivantia purpusii	Hanging Garden Sullivantia	3C	4	Soldier Creek ACEC
Thalictrum heliophilum	Sun-Loving Meadowrue	3C	4	South Cathedral Bluffs ACEC, Soldier Creek ACEC
Spiranthes diluvialis	Ute Lady's-tresses orchid	T	1	Not Documented in resource area
Penstemon pharringtonii	Harrington Beardtongue	2C	1	Not documented in resource area

[1]Federal Status (*Endangered Species Act*): T = Threatened; 1 = Category 1 (candidate for formal listing); 2 = Category 2 (candidates under review for formal listing); 3C = Category 3C (former candidates for federal listing)

[2]State List (Colorado Plant Species of Special Concern): List 1 = Federal threatened or endangered plant species and species that are rare throughout their range; List 2 = Plant species that are rare in Colorado but relatively common elsewhere within their range; List 3 = Plant species that are rare but for which conclusive information is lacking; List 4 = Plant species of limited distribution or of special interest.

[3]ACEC = Area of critical environmental concern designated, in part, as important habitat for the species(s) identified or other special management area.

20 percent slope and to exposures of the Parachute Creek Member of the Green River Formation on the west side of Calamity Ridge where slopes of the exposure are barren, loose scree and have southerly to south-westerly aspects.

Lesquerella parviflora (LEPA) occurs on exposures of the Parachute Creek Member at elevations above 7,800 feet. Most the BLM land habitat for this specie occurs within the resource area. This plant has been located on the eastern edge of the Piceance Basin along Deer Gulch and Timber Gulch, on the western edge of the basin along Calamity Ridge, and on the southern edge of the basin along Cathedral Bluffs and Roan Plateau.

Gentinella tortuosa (GETO) occurs at the same location as LEPA along the Cathedral Bluffs, the only known Colorado location for the species.

Thalictrum heliophilum (THHE) occurs on the barren, loose scree exposures of the Parachute Creek Member along the Cathedral Bluffs and similar exposures of the Roan Plateau and is generally associated with LEPA.

Exposures of the Parachute Creek Member of the Green River Formation along Raven Ridge provide the only Colorado occurrences of five sensitive plant species, two of which are rare throughout their range of distribution. The other three are rare in Colorado but more common in the Uintah Basin of Utah.

The following species are affected:

Penstemon grahamii (PEGR) and *Penstemon albifluvis* (PEAL), both category 1 Candidate Species for listing as threatened or endangered species, occur only on Raven Ridge in Colorado, and along the White River in eastern Utah. Some suitable habitat for both species occurs along the White River in Colorado just west of Raven Ridge, but no reports of either species has been documented.

Cryptantha rollinsii (CRRO), *Eriogonium ephedroides* (EREP), and *Parthenium* ligulatum(PALI) occur on exposures of the Parachute Creek Member along Raven Ridge. Potential habitat also occurs along the White River just west of Raven Ridge and perhaps in Lower Evacuation Creek.

Other rare species not associated with habitats similar to those previously described include (1) *Astragalus detrilalis* (ASDE), which occurs in two locations: School Gulch south of the White River and near Massadona; (2) *Oenothera acutissima* (OEAC), which occurs in this resource area only in the Blue Mountain area in intermittent shallow soil drainages above 7,700 feet elevation. The drainages have fractured sandstone beds exposed in many places, which creates a moist habitat associated with seeps or late spring flows; and (3) *Gilia stenothyrsa* (GIST), which occurs in the lower part of Greasewood Creek and in Horse Draw on barren, loose scree exposures of the Uintah Formation.

Inventories in Dinosaur National Monument in 1987-1989 identified several rare plants south of the Yampa River that may also occur on BLM lands. These include *Astragalus argophyllus* var. martinii, *A. dechesnensis*, *A. hamiltonii*, *Aster perelegans*, *Arabis vivariensis*, *Cirsium ownbeyi*, *Epipactis gigantea*, *Erlogonum lonchophyllus* var. saurinum, *enceliopsis nudicaulis*, *Eriogonum tumulosum*, *Fritillaria pudica*, *Habernaria zothecinia*, *Pellaea breweri*, *P. glabella*, *Penstemon scariosus* var. cyanomontanus, *Tifolium andinum*, *Zigadenus vaginatus*. No occurrence of these species has been documented on public lands in the Blue Mountain or Wolf Creek geographic reference areas (GRAs).

FORESTRY

The Forest Management Program, within the resource area, consists of Timberland Management and Woodland Management.

Approximately 50,150 acres are covered by Timberlands, with the predominate tree species consisting of Douglas-fir, spruce/fir, lodgepole pine and aspen. Timberland management focuses on wood products measured in board feet and includes lumber, timbers and house logs.

There are approximately 622,590 acres of woodland, with the predominate species consisting of pinyon, Utah juniper, rocky mountain juniper and one seed juniper. Woodland management focuses on products generally not measured in board feet and includes firewood (cords), juniper posts and poles.

In the future, the bureau will be standardizing the measurement and reporting of wood products using a cubic measure.

TIMBERLANDS

The existing White River Resource Area Forest Management Plan (FMP) completed in 1984 identified 19,190 acres of Douglas-fir and spruce/fir in the resource area as commercial and available for intensive management. This FMP did not consider harvest suitability criteria or stipulations/limitations by other resources such as soils and wildlife. The FMP also identified five timber management areas (TMAs) as the focus of the timber harvest program, as these areas contain the most extensive and highest quality timber stands in the resource area. Within the TMAs there are approximately 6,190 acres of timberland. Since completion of the FMP, approximately 20 percent of the area in the TMAs was patented under/by oil shale claims.

For this RMP, the acres of timberland have been recalculated. The acreage of timberland was calculated using the current soil surveys, which allows current and potential forest sites to be considered. Based on this method, 24,125 acres of timberland occur in the resource area. The acreages within the five TMAs was calculated more specifically using Surface Cover Classes. There are 5,110 acres of timberland within the five TMAs.

Timberlands are also classified as commercial and non-commercial stands based on production. Commercial timberlands are capable of producing 20 cubic feet of wood per acre per year. Non-commercial timberlands produce less than 20 cubic feet of wood per acre per year.

Douglas-fir

Douglas-fir occurs at elevations from 7,000 to 9,035 feet and predominantly on north- and east-facing aspects. Generally Douglas-fir is found in pure stands at upper elevations but is relatively drought resistant and can also be found on more arid sites at lower elevations or on south and west aspects. Pinyon can also be found on these poorer sites.

Most the stands are stocked with a mixture of age and size classes. Those trees over 12 inches in diameter are susceptible to Douglas-fir beetle attack, which generally is fatal.

Spruce/fir

A total of 2,660 acres of spruce/fir type occur within the resource area. The predominate species are blue spruce, Engelmann spruce, and subalpine fir. Spruce-fir is generally found in a mountainous environment on high elevation. This type is often a mixed stand on ridges and along stream bottoms above 8,000 feet and may include aspen, lodgepole pine, and Douglas-fir. These stands generally are uneven aged and healthy.

Lodgepole Pine

About 80 acres of lodgepole pine occur on isolated tracts of BLM land near the North Fork of the White River. Lodgepole pine grows mostly on north aspects and gentle slopes. This type is often associated with aspen, Engelmann spruce, blue spruce, and subalpine fir. Size and age classes are currently unknown.

Aspen

Aspen is a fast-growing, short-lived, shade-intolerant tree that occupies approximately 23,360 acres within the resource area. Aspen stands are found above 7,000 feet on north and east aspects. Aspen is an aggressive sprouter and is a pioneer species on disturbed sites within its ecological range.

WOODLANDS

Woodlands in the resource area consist of pinyon/juniper and Gambel oak. For this RMP the acres of oakbrush is estimated at 20,000 acres.

The existing White River Resource Area Forest Management Plan (FMP), completed in 1984, identified 622,590 acres of pinyon/juniper woodland, of which 177,150 acres were considered as commercial woodlands.

For this RMP, the acres of woodland were recalculated. The acreage of woodland was calculated using the current soil surveys, which allows current and potential woodland sites to be considered. Based on this method 652,800 acres of woodland occur in the resource area.

Woodlands are also classified as commercial and non-commercial stands based on production. Commercial woodlands are considered as producing greater than 8 cords per acre with at least 50 percent of the wood being pinyon.

Non-commercial woodlands do not produce by either quantity or composition the above volumes.

Pinyon/Juniper

The dominant species associated with this type are pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*). Common juniper (*Juniperus communis*) and one-seed juniper (*Juniperus monosperma*) may also be present. The stand composition, site characteristics, and productivity are highly variable and are based on moisture relationships. On drier sites (lower precipitation or elevation or south and west aspects), Utah juniper is dominant. As the moisture regime improves (more available moisture) pinyon increases in dominance, until at the upper limits of this type, stands tend to be pure pinyon.

Gambel Oak

An estimated 20,000 acres of gambel oak occur within the resource area. This vegetation type is generally found at elevations from 6,000 to 9,000 feet on slopes of 0 to 50 percent. Gambel oak's capability to produce woodland products, primarily firewood, is limited due to variability in growth form. No studies have been conducted to determine harvestable volumes.

DEMAND FOR WOODLAND PRODUCTS

Tables 3-16 and 3-17 show the demand for woodland products based on permits used. Primary forest products are pinyon and juniper firewood, Christmas trees (pinyon), and juniper fence posts. Minor forest products include oak and aspen firewood and transplants (pinyon, aspen).

Table 3-16. Woodland Products - Commercial Permits

Product	Year - 1989	Year - 1990	Year - 1991	Year - 1992	Year - 1993
Pinyon/juniper Firewood (Cords)	984*	1,081*	318	1,090*	404
Christmas Trees (Each)	1,015	690	770	634	638
Fence Posts (Each)	1,825	2,210	2,600	3,030	3,395

* 1989 - 846 cords Associated with Conoco, Inc. project.
* 1990 - 595 cords Associated with Conoco, Inc. project.
* 1992 - 910 cords Associated with Colorado Interstate gas project

Table 3-17. Woodland products - Personal Use Permits

Product	Year - 1989	Year - 1990	Year - 1991	Year - 1992	Year - 1993
Pinyon/juniper firewood (cords)	302	207	230	261	175
Christmas trees (each)	337	308	261	270	270
Fence posts (each)	4,080	940	1,255	1,704	1,020

LIVESTOCK GRAZING

The present authorized livestock grazing use on BLM rangelands in the White River Resource Area was initially established from 1940 to 1965. Livestock grazing management was refined in 1980 when the BLM published a Final Environmental Impact Statement and Record of Decision on the grazing management program for the White

River Resource Area. Decisions developed in that EIS and subsequent Rangeland Program Summaries addressed five major actions:

1. Allocation of forage among predominate grazing animals and other users,
2. Initiation of intensive grazing management
3. Continuation of existing intensive grazing management practices,
4. Minimum period of rest for each allotment, and
5. Range improvements to enhance rangeland productivity and management.

FORAGE ALLOCATION AND STOCKING LEVELS

In 1980, the livestock grazing use levels were 160,306 animal unit months (AUMs). The current livestock grazing use level in the resource area is 126,785 AUMs. Adjustments in forage allocations, both increases and decreases were based upon results of monitoring studies started in the early 1980's and which are continuing now.

Currently, the resource area issues 127 grazing permits to graze livestock on 144 allotments. Allotments vary in size from 40 to 134,602 acres of BLM land with grazing capacities ranging from 7 to 14,716 AUMs.

ALLOTMENT CATEGORIZATION

Allotment categorization is used to establish priorities for distributing available funds and personnel to achieve cost-effective improvement of rangeland resources. Categorization is also used to organize allotments into similar groups for purposes of developing multiple use prescriptions, analyzing site-specific and cumulative impacts, and determining trade-offs.

Three categories broadly define rangeland management objectives in response to an analysis of the allotment's resource characteristics, potential, opportunities, and needs. The three categories are: maintain; improve; and custodial. Table 3-18 shows the number of allotments in each category.

Table 3-18. Allotment Categories

Category	Number of Allotments	Acres of BLM Land	Authorized AUMs
Improve	54	1,236,490	105,115
Custodial	54	67,800	7,794
Maintain	36	130,340	13,576
Total	144	1,434,630	126,485

Improve category may include one or more of the following criteria:

1. Present range condition is unsatisfactory.
2. Allotments have moderate to high resource production potential, but are producing at low to moderate levels.
3. Resource use conflicts or controversy exit.
4. Opportunities may exist for positive economic return from BLM investments.
5. Opportunities exist to achieve the allotment's potential through changes in management.
6. Allotments with high or medium riparian potential with greatest opportunity to develop that potential.

Custodial category may include one or more of the following criteria:

1. Present range condition is not a factor.
2. Allotments have low resource production potential and are producing near their potential.
3. Limited resource use conflicts or controversy may exist.
4. Opportunities for positive economic return from BLM investments do not exist, or are constrained by technological or economic factors.
5. Present management is accomplishing the desired results.
6. Allotments containing small acreages of BLM land in comparison to the total acreage of the allotment.

Maintain category may include one or more of the following criteria:

1. Present range condition is satisfactory.
2. Allotments have moderate to high resource production potential and are producing near their potential.
3. No significant resource use conflicts or controversy exit.

4. Opportunities may exist for positive economic return from BLM investments.
5. Present management is accomplishing the desired results.
6. Allotments with high or medium riparian potential contain satisfactorily functioning riparian systems.

Appendix D, Tables D-1 and D-2 depict allotments with existing AMPs and allotments proposed for AMPs. Appendix D, Table D-3 shows the current allotment categorizations for the White River Resource Area.

Allotments may be moved from one category to another as new information becomes available, resource conditions change, or management activities are implemented. Such changes must be consistent with the category criteria discussed above. Such changes must also be supported by a documented analysis showing the basis for the change. Livestock trailing use is authorized to and from BLM grazing allotments along established trails on 9,600 acres of BLM land. Established trails include the White River Trail, Victory Trial, Dragon Trail, Yellow Jacket Trail, Ute Trail and Staley Mine Trail, all collectively known as the White River Trail Allotment 6699.

WILD HORSES

Wild horses presently occur in and are presently managed on a total of 512,528 acres of BLM land in the White River Resource Area (Table 3-19). The estimated current population of wild horses is 516. The wild horses are presently distributed among three wild horse units that occur in ten livestock grazing allotments. Of the three wild horse units, only one is a herd management area (HMA). It is called the Piceance-East Douglas Creek HMA. The other two units are called herd areas (HAs). They are the West Douglas HA and the North Piceance HA. A wild horse management plan for the Piceance-East Douglas HMA was approved in June 1981 at which time implementation of the plan began.

Table 3-19. Land Ownership within the Three Wild Horse Units

Wild Horse Area	Acres				Animal Management Level	Horse Population
	BLM	State	Private	Total		
Piceance-East Douglas HMA	120,375	5,752	38,605	164,732	95-130	319
West Douglas HA	271,939	--	30,352	302,291	0	91
North Piceance HA	120,214	--	10,705	130,919	0	106
Total	512,528	5,752	79,662	597,942	95-130	516*

*Derived from the last aerial census done in March 1993.

Historical records show that wild horses were present in the resource area when the first settlers arrived in 1882. Early ranchers released studs of their own selection into the wild herds to upgrade the overall quality of the herds. Partial gatherings were periodically made to provide ranch saddle and work horses. Prior to widespread mechanization, an average ranch in the area might require 100 saddle and work horses. During the depression years, when many small ranches and homesteads were abandoned, domestic horses were often released when their owners left. These horses, of both draft and light work stock, were readily absorbed into the wild horse herds, increasing their numbers and providing an infusion of genetic material into the existing wild horse population.

The resource area wild horse herd was initially counted in August 1975 and numbered 143 head. The current population estimate of 516 is an extrapolation from the last aerial census done in March 1993 with a 20 percent adjustment for annual population recruitment. Over the last ten years, 897 horses have been removed in the course of six gathering operations.

Wild horse movement within the three wild horse units is heavily influenced by livestock fences that occur in the ten livestock allotments. The fences are a restriction to their free-roaming character, in that they readily move between allotments that have incomplete boundary fencing. Lack of complete boundary fencing on the designated wild horse range has enabled horses to move into areas they have not recently occupied. Horses have moved over Cathedral Bluffs and into the Douglas Creek area providing for genetic interchange between the Douglas Creek and Piceance Basin herds.

Seasonal factors also influence horse movement and areas of concentration. During periods of deep snow cover, horses concentrate on wind-swept ridges and southern exposures where forage is more readily available. During summer, early fall, and throughout drought years, wild horses rely heavily on perennial water sources as intermittent waters (ponds, seeps, etc.) dry up. The most important water sources in the wild horse range are Yellow Creek, Upper and Lower Barcus windmills, Stake Springs, Boxelder Creek, Corral Gulch, Duck Creek, Spring Creek and Douglas Creek. There are also approximately 19 developed springs, ten undeveloped springs feasible for development, and 37 reservoirs within the wild horse range.

Increased energy development and the increased forage requirements for wild horses have resulted in expansion of the wild horse range. Presently, wild horses inhabit areas beyond the recognized wild horse range (those areas used by wild horses at the passage of the *Wild and Free-Roaming Horse and Burro Act of 1971).*

BIG GAME

PRONGHORN ANTELOPE

Pronghorn antelope occupy approximately 224,062 acres within the Area, 83 percent of which is administered by BLM. Distribution is primarily confined to the sagebrush/saltbush corridor extending from Pinyon Ridge to the Utah State Line (see Map 3-1). This area presently supports a resident herd of about 235 animals. General distribution shifts toward the west in the winter.

Pronghorn in the State-established Game Management Unit (GMU) 10 are currently allocated federal forage sufficient to accommodate 219 animals. Current long-term forage allocations allow for a slight increase on BLM land to 224 animals. Colorado Division of Wildlife's (CDOW's) long-term goals call for an average post-season herd of 300 animals, 249 on BLM. To meet CDOW's goal, additional forage equivalent to 8 AUMs for 25 additional animals on BLM land would be necessary.

The remaining pronghorn range occurs in GMU 11, the Crooked Wash area. Pronghorn use the sagebrush-grass range year-round, although winter populations are generally larger due to an influx of animals from the north. The number of pronghorn occupying this area normally does not exceed 40 to 50 animals, and no revision to the current forage allocation is considered necessary.

Based on Kindschy's (1982) habitat rating system, general condition of Unit 10's pronghorn range is roughly 40 percent of optimum but within 30 percent of the range's potential. Habitat quality is most limited by insufficient availability of broad-leaved herbaceous forage and poorly distributed sources of reliable water. Forbs comprise an average 1-2 percent of vegetative ground cover on pronghorn ranges and rarely exceed 5 percent. Water sources are favorably distributed across pronghorn ranges, however, many facilities do not retain water during dry periods. Woody forage and cover conditions are generally favorable, with excessive shrub density and height occurring on an estimated 10 to 20 percent of occupied range.

MULE DEER

The resource area provides seasonal or year-round habitat to three general herds of mule deer: the Blue Mountain herd, the Bookcliff herd, and the Piceance Basin herd. The Blue Mountain herd summers on Blue Mountain and winters on benches along the White and Yampa Rivers and the south face of Blue Mountain.

The Bookcliff herd summers on the Colorado/White River divide. Suitable summer habitat for this herd is confined to a portion of the Cathedral Bluffs, the Baxter/Douglas Pass divide, and isolated tracts on Oil Spring, Rabbit and Texas Mountains. Approximately 60 percent of the population winters at lower elevations in the Douglas, Missouri, and Evacuation Creek drainages. CDOW has designated approximately 148,963 acres of summer range in the Douglas/Cathedral Creek Areas as critical habitat.

Most deer in the Piceance Basin herd inhabit the resource area during the fall through spring months and summer on the White River National Forest and Roan Plateau. Due to heavy concentrations of animals on limited range in late

winter and early spring, severe winter ranges in the Piceance Basin have been designated by CDOW as critical habitat.

Deer numbers and population objectives have changed throughout the resource area since baselines were established for the *White River Resource Area Grazing Management Environmental Impact Statement (EIS)* in 1979. Long-term deer allocations of 66,388 AUMs for 51,525 deer were made to support CDOW's 1979 population goals. Deer populations in 1990 were estimated at 45,941.

Deer populations fluctuate dramatically. For example, Piceance Basin had recorded highs of 35,000 during the winter of 1977-78, with lows of 15,500 in 1979-80. Severe winters with prolonged periods of intense cold, heavy snow accumulations and cold, wet springs regularly decimate populations. However, recovery normally progresses rapidly to mean population figures of about 24,000 animals.

BLM lands receive approximately 80 percent of the winter deer use in this resource area. Winter ranges are adequately stocked with desirable browse species; however, plants typically display low vigor due to excessive and persistent use, and mature and overmature age classes predominate. Average use of dominant woody forage on . high elevation winter ranges generally exceed rates considered maximum for sustained productivity. This condition is intensified on lower elevation severe winter ranges where site conditions impose further limitations on regeneration and production and where maximum animal densities are attained. Maps 3-2 and 3-3 show deer summer and winter ranges, respectively.

The condition and suitability of late spring and summer deer ranges have not been extensively evaluated, particularly in the context of fawn-rearing cover and availability of preferred herbaceous forage. The fact that deer production is about 21 percent lower than desired in Units 21 and 10 and low winter fawn survival is depressing recruitments in Units 22 and 11 may be indicative of forage-related deficiencies on ranges occupied prior to the late winter season.

Other aspects of seasonal habitat suitability such as proximity to water and distribution of suitable forms of cover in relation to forage types have not been assessed on a large scale. Security or hiding cover is not normally considered a limiting factor outside the fawn-rearing period. Summer thermal cover is considered limited, but stable.

The Piceance and Douglas/Cathedral Creek areas have had the highest levels of development-related habitat loss, due primarily to oil and gas drilling. Currently, the oil and gas industry contributes the largest share of long-term occupation and modification of wildland. In the Douglas/Cathedral GRA, approximately 35% of general winter range, and 10% and 23% of critical severe winter range and critical summer range, respectively, are coincident with established oil and gas fields. Road densities in intensively developed fields regularly exceed 3 miles per square mile that, owing to animal's tendency to avoid human-related disturbances, likely operates to depress the effective capacity of the habitat to support pre-development use. The effects of indirect habitat loss, or behavioral disuse of suitable habitat, is cumulative to, and generally more influential than, impacts attributable to direct occupation and conversion of habitat.

Oil shale and nahcolite deposits are located in the Piceance Basin's most important winter range. The massive oil shale development anticipated in the 1970's and 1980's has not materialized, and only one nahcolite solution mining operation exists in this area.

There are concerns that expanding elk and wild horse populations in northwest Colorado are adversely influencing deer populations. These species' gregarious and transient behavior predisposes competition with deer. Deer are much more rigidly tied to discrete seasonal ranges. When resources sought by elk and horses become depleted, they are apt to search widely for alternate forage, whereas deer tend to remain sedentary through the course of the winter despite range conditions.

ELK

Three populations of elk use portions of the resource area: the Blue Mountain herd, the Yellow Creek herd, and the White River herd. The Blue Mountain herd summers on Blue Mountain and east to the Citadel Plateau. Due to their limited extent, summer ranges are considered critical habitat with emphasis on favored aspen associations. These elk winter throughout the lower elevation juniper/sagebrush types, with significant concentrations occurring in Lower Wolf Creek, Crooked Wash, and Dinosaur National Monument. GMU 10 (Blue Mountain) is managed as a trophy elk hunting area.

The Yellow Creek herd summers along the Piceance Rim and Roan Plateau westward to Utah. Approximately 70

percent of this herd winters in the Douglas and Piceance Creek Basins. Due to limited extent, summer range (see Map 3-4) in this area is considered critical habitat.

White River herd summer use occurs primarily in the White River National Forest, although relatively small or isolated tracts of BLM-administered aspen/mountain browse associations in the Danforth Hills, Oak Ridge and Nine Mile Gap areas also serve in this capacity. Winter range is confined, encompassing the benchlands along the White River and its major tributaries, extending south along the Hogback and north to Nine Mile Gap and Milk Creek.

All production areas and severe winter range (see Map 3-5) associated with the White River herd are considered critical habitat. The Oak Ridge State Wildlife Area, administered by the Colorado Division of Wildlife, including about 3000 acres of BLM land, is a major winter concentration area. On average, this area supports about 2000 animals from December through April. BLM has aligned much of its recreation and livestock management on Oak Ridge with that of CDOW's objectives.

Over the past decade, northwest Colorado has experienced dramatic expansions in elk populations and distribution. A forage base sufficient to maintain 1978 elk population levels on BLM land (1783 animals/4745 AUMs) was allocated in the grazing EIS, with provisions to allow for a long-term increase of 8 percent (1926 animals/5004 AUMs). Elk numbers have already exceeded those long-term expectations. Current elk populations attributable to BLM land over the period 1986 to 1990 are 250 percent or nearly 3,000 animals higher than that considered in the allocation process. Increases in population and/or seasonal use has been especially noticeable in Piceance Basin, Blue Mountain, and lower Wolf Creek. CDOW is attempting to curb the rate of elk expansion and reduce base populations on all units within the resource area through regulated harvest.

The disparity between prior allocations made in the grazing EIS and current CDOW long-term objectives involves a total of 5,849 AUMs, or seasonal use by an additional 1,700 animals.

The productivity, survival and body condition of elk in this area appear indicative of adequate habitat quality and forage conditions on both summer and winter ranges. Map 3-4 and 3-5 show elk summer and winter ranges, respectively.

RAPTORS AND NON-GAME SPECIES

RAPTORS

Roughly 25 species of raptor or raptor-like birds reside in the resource area on a yearlong or seasonal basis and occupy nearly all available habitat types (Table 3-20). Special attention or protective status has been conveyed to many of this group. Wintering bald eagles and the 18 resident and breeding raptor species are the focus of management.

Regular migrants and winter visitors make extensive use of lower elevation habitats within the resource area. Rough-legged hawks, bald eagles, and harriers use open sagebrush, saltbrush, and agricultural situations, while the three accipiters and most owls use pinyon/juniper, cottonwood and urban/agricultural woodlands. Although wintering bald eagles forage extensively in adjacent lands, much of their use is concentrated along the major river corridors (See Special Status) where riverine cottonwood galleries provide nocturnal roost sites and diurnal foraging perches.

Energy-related projects in the Piceance Basin and potential coal lease areas have contributed or prompted comprehensive baseline surveys for buteo and eagle nests. Nest reports are also compiled from incidental observations and project-driven field inspections. CDOW has compiled intermittent status and production records of selected nest sites from about 1975. BLM is currently (1990) participating in an interagency effort to compile all available raptor nest site information in a computerized database. Attempts to quantify raptor population status and productivity have been sporadic, and are normally the result of short-term project-driven need. Data compilation is generally insufficient to accurately assess population trend or habitat condition. A notable exception involves an intensive study of ferruginous hawk nest site selection, prey dynamics, hawk productivity, and response to disturbance conducted from 1981-1988 by Western Fuels-Utah.

Currently, nest records for species that build large conspicuous stick nests are well represented in proportion to their breeding density. Tree and cavity nesting species are poorly represented. Deficiencies in nest recordation involve nocturnal species (i.e., owls) and species that nest in cavities, conifers, burrows, or crevices (i.e., owls, accipiters and vultures). Habitats or substrates where inventory or management prescription have been neglected

include pinyon/juniper woodlands (600,000 acres), aspen forests (15,000 acres), Douglas-fir and spruce-fir forests (24,000 acres), riparian woodlands (100 acres) and active prairie dog towns (65,000 acres). Based on published breeding densities in similar habitats, as many as 250 additional pairs of woodland-dwelling raptors may occur in the resource area.

Table 3-20. Raptor Status and Habitat Associations

Species	Residency	Status - Population/ Administration	Recorded Nest Sites	Common Nest Substrate/ Habitat Association
Red-tailed hawk	R	C/MBA	217	Cliff, Aspen, Cottonwood
Golden eagle	R	C/EPA, sen	335	Cliff
Ferruginous hawk	BR	FC/MBA, cnd, sen	94	Nest Platforms, ground, Junipers in Salt Desert/Sagebrush
Cooper's hawk	BR/WTR	C/MBA, sen	8	Pinyon/Juniper, Aspen, Douglas Fir, Oakbrush
Sharp-shinned gawk	BR/WTR	UNC-FC/MBA, sen	3	Pinyon/Juniper, Spruce-fir, Aspen
Northern goshawk	BR/WTR	UNC-FC/MBA, cnd, sen	4	Pinyon/Juniper, Spruce-fir, Aspen
Northern harrier	BR/M/WTR	FC/MBA, sen	4	Emergent Riparian, Grass Swales, Sagebrush
Prairie falcon	BR/WT	UNC/MBA, sen	5	Cliff
American kestrel	BR/M	C/MBA	Not Recorded	Pinyon/Juniper, Aspen, Cottonwood, Bank cavities
Bald eagle	BR/M/WTR	R-C/ESA, EPA, sen	2	Riverine Cottonwood
Rough-legged hawk	WTR	C/MBA	N/A	N/A
Osprey	M	UNC/MBA, sen	0	Snags/platforms associated with fisheries
Peregrine falcon	M	UNC/ESA	0	Cliff
Swainson's hawk	BR/M	R-UNC/MBA, sen	0	Pinyon/juniper, Cottonwood, Mountain Shrub, Aspen
Merlin	M/WTR	R/MBA, sen	0	Riverine cottonwood
Great horned owl	R	C/MBA	11	Pinyon/juniper, Cottonwood, Cliff
Long-eared owl	R	FC/MBA	3	Pinyon/juniper, Cottonwood
Short-eared owl	M	R/MBA	0	Emergent riparian, Grass swales, sagebrush
Burrowing owl	BR	UNC/MBA, sen	5	Active Rodent Burrows-Particularly Prairie Dog

Table 3-20 continued

Species	Residency	Status - Population/ Administration	Recorded Nest Sites	Common Nest Substrate/ Habitat Association
Saw-whet owl	BR/M/(WTR)	UNC/MBA	1	Pinyon/juniper, Aspen cavities
Snowy owl	WTR	R/MBA	N/A	N/A
Pygmy owl	R	UNC/MBA	0	Pinyon/juniper, Cottonwood cavities
Screech owl	R	(UNC)/MBA	0	Pinyon/juniper, Cottonwood, Aspen cavities
Flammulated Owl	BR	UNC/MBA	0	Conifer, Aspen cavities
Turkey vulture	(BR)	C/MBA	0	Cliffs, Crevices
Barn owl	(R)	(R)/MBA	0	Structures, cavities

Residency: R=Resident, BR=Breeding, WTR=Winter Visitor, M=Migrant
Status: C=Common, FC=Fairly Common, UNC=Uncommon, R=Rare, T=threatened
( ) indicates questionable status
Administrative Status: MBA=Migratory Bird Treaty Act; ESA=Endangered Species Act; EPA=Eagle Protection Act; cnd=Candidate for listing (ESA); sen=BLM sensitive

Land use practices over the past 25 years are thought to be improving or maintaining habitat suitability for raptors adapted for open-country foraging (e.g., eagles, buteo hawks). However, these practices may be gradually reducing the suitability of habitat for woodland adapted species (e.g., accipiters, owls), particularly in the pinyon/juniper type.

The less common woodland habitats (e.g., spruce-fir, aspen, and riparian) are relatively small and dispersed, but support inordinately high raptor breeding densities.

Evidence indicates that direct mortality of raptors is not a major limiting factor to populations in this resource area. However, incidents of electrocution from electric transmission facilities probably occur with far greater frequency than detection indicates. The shooting or poisoning of raptors appears to have declined appreciably from historic levels, but continues to occur at unacceptable levels (six shootings, and 10 poisonings reported over last 10 years).

NONGAME SPECIES

Over 200 species of nongame birds have been documented in the resource area; 60 percent as breeding or resident species, 6 percent as winter residents, and 15 percent as peripheral or rare. Many more uncommon or specialized breeding species occurring in the resource area are riparian/wetland/aquatic associates (e.g., willow flycatcher, yellowthroat, pied-billed grebe), peripheral (e.g., Scott's oriole, gray vireo) or are widely represented in either more typical or extensive habitats (e.g., aspen, spruce-fir) within the region. Birds with relatively constricted continental range considered obligate to common habitat types within the resource area are confined to the pinyon/juniper and low-elevation sagebrush types (e.g., plain titmouse, gray flycatcher).

Little structured avian population monitoring is conducted in the area. Based on observations and the rate and extent of vegetation manipulation, the availability of general habitats and associated avian communities are believed to be stable.

Based on CDOW records, 47 species of nongame mammals, six amphibians, and seven reptiles are known or suspected to occur as seasonal or permanent residents. The status of small mammals associated with the pinyon/juniper and sagebrush types in Piceance Basin have been well documented through oil shale baseline studies. However, the remaining groups, particularly bats and amphibians, are poorly understood.

Nongame species of special concern include: those listed or candidates for listing under the Endangered Species Act, neotropical migratory birds, State Species of Special

Concern having restricted geographical range or special ecological value, and those with declining or undetermined population trends.

GROUSE

BLUE GROUSE

Blue grouse are relatively common and widely distributed across the resource area. BLM administers approximately 405,635 acres of blue grouse habitat on this resource area. Population statistics show that blue grouse populations are stable, although significant periodic swings in abundance occur due to environmental effects on annual recruitment. Blue Mountain and Piceance Basin/Roan Plateau are the two most important blue grouse areas in terms of recreation use and bird abundance.

SAGE GROUSE

Sage grouse are considered a species of special concern by BLM because of large scale reductions in suitable sagebrush habitats, significant declines in continental populations and the near obligate relationship exhibited between these birds and sagebrush. BLM currently administers 298,481 acres of sage grouse habitat. Sage grouse seasonal ranges are shown on Map 3-6.

Approximately 40 leks have been identified in this area. The leks in Blue Mountain/Moosehead Area are moderate to large (30-140 strutting males), while the remaining leks typically host less than 25 males.

Sage grouse are distributed throughout the resource area. (see map 3-9) It is generally assumed that all populations are permanent residents on their respective ranges.

The largest and most prominent populations of sage grouse are located along the Piceance Rim/Roan Plateau and on Blue Mountain. A 1979 study conducted by CDOW in the Piceance Basin documented breeding and nesting functions on relatively narrow mid-elevation ridgetops, with a drift toward higher elevations (>7400 feet) through the brood and general summer use periods. Winter use appears to occur at elevations below 7300 feet, depending on accumulated snow depth and snow texture. Broad ridges at lower elevations may support the bulk of wintering birds during extreme conditions. The Piceance population appears to be undergoing a significant decline in absolute numbers, although wing analysis show normal nest success and recruitment. No explanation for this condition has been expressed, but advanced succession states of the Basin's mountain shrub and sagebrush communities may be a major determinant.

Blue Mountain supports the largest and most productive population and represents the largest contiguous block of suitable habitat in the resource area. Most of the breeding and nest activities on Blue Mountain occur in the mid elevation basins of Turner and Wolf Creeks. Broods gradually disperse and drift to higher elevations. As a result, essentially all sagebrush habitat is considered brood range. Blue Mountain's capacity for strong production and recruitment is largely attributable to an abundance of wet meadow habitats. Reports of large number of birds on windswept ridges on the south rim of the Yampa Canyon may account for a large share of the wintering Blue Mountain population.

Fragmented or low density breeding populations exist in the remaining habitat complexes and certain portions of Piceance Basin (Magnolia, Fourteenmile, Bar D/84 Mesa). Although they do not support populations comparable with Blue Mountain or the Piceance Rim, the Wolf Creek, Crooked Wash, and perhaps the Black's Gulch and Blair Mesa areas support concentrated high density winter use. In general, these areas are currently unable to support yearlong or higher density breeding populations due primarily to the lack of persistent herbaceous understories and mesic meadow types. Sagebrush conformation and extent may also be suboptimal. These areas will probably never produce the numbers of grouse that attract significant hunter participation.

Suitable sagebrush stands along Highway 40 are limited. These predominantly salt desert habitats possess deeply-incised channels that assume the role of brood habitat, although many broods along the White River's irrigated haylands probably originate from the Lower Red Wash area. The origin of large numbers of wintering birds in Lower Wolf Creek is unclear, but likely involves much of the Highway 40 population. Grouse in the Rangely/Dinosaur area appear to be a small resident population associated with the Highway 40 complex. The small number of summering birds in the Shavetail area have appeared over the last five years and their status is unknown.

The Crooked Wash complex is administratively split between this and the adjoining resource area to the north. That area contains a high percentage of private land.

Upland sagebrush conditions are adequate for nesting. Late season brood use has been noted, but brood habitat is considered suboptimal. Several channels in the area support persistent flow, but riparian expression is limited. Concentrated winter use in the Crooked Wash area represents the area's most important function.

The small summer population in Black's Gulch seem to be a remnant resident flock or a fragment of the Crooked Wash complex. Concentrated winter use in this area suggest that the latter is likely. There is evidence that birds wintering at lower elevations on L07 Hill may be associated with breeding birds on Wilson Creek and Little Beaver Creek.

FISHERIES

GAME FISHERIES

This area principally manages aquatic systems that provide primarily cold-water stream and cool-water riverine fisheries. Relative to the extent of stream and river fisheries available in the resource area, BLM-managed segments are fragmented and small.

The BLM has limited management influence or opportunity on the White River, managing 62 parcels that collectively comprise about 12 miles or less than 10 percent of the river below Buford. Over 90 percent of this riverfront is located below Meeker and over 50 percent below Rangely. Fifteen parcels exceed 0.25 mile in length, four exceed 0.5 mile and only 1 is greater than 1 mile in length (1.7 miles). These river segments are principally cool-water non-game and channel catfish fisheries. BLM administers less than 1 mile of the North Fork of the White River--a typical cold-water fishery dominated by rainbow trout and mountain whitefish, with smaller complements of brown, cutthroat and brook trout.

Divide Creek Reservoir is the only BLM-administered warm-water fishery. This 5-acre reservoir has been stocked with various species over the years, and most recently supported black bullhead and channel catfish. Silt accumulations have significantly reduced this structure's capacity and depth. This, with heavy aquatic growth, culminated in a complete winter-kill in 1989. The reservoir failed to pool water in 1990 and 1991; its ability to retain persistent storage in the future is questioned. The remaining BLM-managed pond fisheries, Peterson Draw Reservoir, is a 2-acre stream fed impoundment stocked intermittently with rainbow trout.

Warm-water game fish (e.g., northern pike, yellow perch, smallmouth and largemouth bass, black crappie, bluegill and green sunfish, and black bullhead) are present in 2 CDOW-managed state wildlife areas along the White River, and have recently appeared in and below Kenney Reservoir from illicit and inadvertent releases. The potential for practical development of warmwater fisheries on BLM lands is poor.

Stream fisheries represent the bulk of BLM's management base. Out of 80 perennial stream systems with partial BLM responsibility, only 16 (20 percent) are known to support a sport fishery. BLM administers a total of about 32 miles of stream fisheries, which represents about one-third of these stream's occupied extent. BLM-administered reaches are primarily relegated to small perennial headwater reaches in the Blue Mountain, Danforth, Piceance and Douglas GRAs (see Table 3-21).

Table 3-21. Statistics on Current BLM-Administered Stream Fisheries

GRA	Stream Name	BLM (mi)	Fish Species	Stream Fisheries Situation	
				Condition/ Trend	Problems/Limitations
Danforth Hills/Jensen	Big Beaver Cr.	0.6	Cut, Rnbw	Good-Static	N/A
Danforth Hills/Jensen	Flag Cr.	0.3	Brk	Fair-Static	flow volume
Piceance	Piceance Cr.	2.0	Rnbw, Brwn	Poor-Static	irrigation drawdown, woody expression

Table 3-21 continued

GRA	Stream Name	BLM (mi)	Fish Species	Stream Fisheries Situation	
				Condition/ Trend	Problems/Limitations
Piceance	Clear Ck.	1.5	Rnbw	Poor-Static	woody expression, bank stability
Piceance	Fawn Cr.	2.8	Rnbw	Fair-Static	woody expression
Blue Mountain/ Moosehead	Meadow Cr.	1.4	Brk	Fair-Static	woody expression
Piceance	Black Sulphur Cr.	2.7	Cut, Rnbw	Fair-Improv	woody expression
Piceance	Brush Ck.	0.4	Rnbw	Poor-Static	woody expression, bank stability
Piceance	Willow Cr.	4.5	Rnbw, Brk	Fair-Static	woody expression
Douglas/Cathedral	E. Douglas Cr.	0.9	Cut, Rnbw, Brk	Poor-Improv	woody expression
Douglas/Cathedral	Brush Cr.	1.9	Cut, Rnbw	Poor-Improv	woody expression
Douglas/Cathedral	Bear Park Cr.	0.5	Cut, Rnbw	Poor-Improv	woody expression
Douglas\Cathedral	Trapper's Cr.	2.0	Cut	Poor-Improv	woody expression
Douglas/Cathedral	Lake Cr.	5.9	Cut	Poor-Improv	woody expression
Douglas/Cathedral	Soldier Cr.	1.7	Cut, Brk	Poor-Static	mass wasting, woody expression
Douglas/Cathedral	Cathedral Cr.	1.5	Cut	Poor-Improv	woody expression, irrigation drawdown
Douglas/Cathedral	Bitter Cr.	2.0	Brk	Poor-Static	woody expression
White River	White River	11.8	Chct, Mtwt, Rnbw, Blhd	Fair/Good-Static	bank stability, channel modification, woody expression
White River	North Fork White River	0.4	Rnbw, Brk, Brwn, Mtwt, Cut	Good-Static	N/A

Fish Species Codes: Cut(cutthroat trout), Rnbw(rainbow trout), Brk(brook trout), Brwn(brown trout), Mtwt(mountain whitefish), Chct(channel catfish), Blhd(black bullhead).

These systems are inhabited almost exclusively by various trout. With few exceptions, fish populations in these streams are poor due to marginal or fluctuating flows and/or degraded aquatic habitat conditions. Water quality, as evidenced by aquatic invertebrate populations, appears satisfactory in most these stream systems.

The cutthroat trout (*Onchonhynchus clarkii*), Colorado's only native trout, is represented in this resource area by the Colorado River subspecies, O.C. *pleuriticus*. This species is the most widely distributed gamefish in the resource area.

Colorado River cutthroats are candidates for listing under the *Endangered Species Act* due to habitat loss and hybridization with introduced non-native trout. Pure strains of *pleuriticus* are thought to be virtually non-existent and genetic quality continues to decline (Martinez 1988).

Several small, self-sustaining Colorado cutthroat populations persist in the resource area (Table 3-22), although all suffer from varying degrees of hybridization with rainbow. The

East Douglas Creek drainage encompasses 90 percent of current cutthroat distribution on BLM lands within the resource area. Trapper's Creek, encompassed by the Naval Oil Shale Reserve, is part of the Colorado River drainage and is administered through this and the adjoining BLM Area Office. Fish populations in Trapper's Creek and the East Douglas drainage were last rated category "C", which indicates that although hybridization is evident, the fish retain characteristics strongly representative of the subspecies. These populations are considered remnant native stock.

Table 3-22. Colorado River Cutthroat Trout Fisheries

Stream Name	Watershed	BLM-administered miles	Fisheries condition
Big Beaver Ck.	Big Beaver	0.6	good
Trapper's Ck.	Parachute	2.0 (Naval Oil Shale)	poor
Bear Park Ck.	East Douglas	0.5	poor
Brush Ck.	East Douglas	1.9	poor
E.Douglas Ck.	East Douglas	0.9	poor
Lake Ck.	East Douglas	5.9	poor
Cathedral Ck.	East Douglas	1.5	poor
Soldier Ck.	East Douglas	1.7	poor
Total		15.0	

Black Sulphur Creek in Piceance Basin contains hybridized cutthroat, but it is unclear whether these fish were introduced or represent residual native populations.

Big Beaver Creek is managed primarily by the U.S. Forest Service and private landholders; BLM administers less than 10 percent of this stream's length. Martinez (1988) found fish taken from Big Beaver Creek to represent a cutthroat population with a purity rating of "B" (out of a 5-point system with "A" being most pure and "F" being least pure), indicating slightly hybridized characteristics.

Competition with brook trout has been a major issue in the suppression of cutthroat populations in the West, however,

sympatric and potentially competitive populations are not common in this resource area. A more pressing issue concerns preservation of genetic integrity by avoiding further dilution of cutthroat stock via hybridization with introduced rainbow and non-native races of cutthroat. Remaining stream fisheries in the resource area are comprised of non-native trout populations. Many of these streams are intermittently stocked by the State and private individuals.

Major constraints on BLM lands fisheries development potential in this resource area include the limited extent, fragmented distribution, diminutive size, and high flow variability of perennial reaches administered by BLM. Land distribution patterns generally relegate BLM fisheries to smaller, first through third order tributaries with small base flows.

Historic livestock use has had marked influence on the suitability of these systems for fish occupation. Although in various degrees of recovery, channel and floodplain characteristics and riparian vegetation are typically suboptimal in terms of in-stream structure, width/depth relationships, sinuosity, bank stability, and sediment capture. Most BLM holdings remain vulnerable to animal use and surface disturbance due to fine, erosive soils, degraded channel and floodplain conditions, and steep, dissected topography that complicates effective management of animal use patterns.

In a few cases, historic fisheries (e.g. Cow Creek) have been lost, and subsequent degradation of contributing tributaries severely limits prospects for recovery within reasonable timeframes. Most BLM streams continue to

suffer principally from inadequate extent, density and/or stature of resistant bank vegetation (e.g. sedge/rush or woody vegetation) that is considered elemental to the development of mature channel, floodplain and flow characteristics necessary for viable aquatic systems. Such conditions prolong or stall system recovery by reducing the system's ability to accumulate and capture sediment, dissipate stream energies, or enhance the recharge and sustained release of alluvial storage, all of which not only aggravate the effects of intense runoff events (i.e. erosion), but minimizes substrate and soil moisture available for plant growth.

Many stream systems incapable of sustaining a channel fisheries have and can support pond fisheries, either through constructed facilities or beaver dams (e.g. Wilson Creek, West Creek). Beaver ponds provide the only source of suitable habitat during periods of deficient flow on several streams.

Irrigation drawdown is a major factor in limiting suitable fisheries only on BLM portions of lower Piceance Creek, a marginal trout fisheries. Cathedral Creek also supports irrigation use, but minimum flow requirements limit drawdown to 1.5 cfs.

Several stream reaches administered by BLM have been granted minimum in-stream flow protection by the Colorado Water Conservation Board (Table 3-23). With current levels and timing of agricultural use, these flows are thought adequate to maintain present fisheries and aquatic habitat conditions, but often (e.g. Cathedral, East Douglas and Trapper's Creek) appropriated flows may be insufficient to promote accelerated system recovery. Loss of peak flow volume to industrial water uses would detract from system recovery. The remaining stream fisheries detailed in Table 3-23 have no appropriated minimum in-stream flow requirements.

Table 3-23. No Minimum In-Stream Flow Requirements

Stream Name	Amount (cfs)	Special Conditions
Bear Park Creek	1.0	no
Cathedral Creek	1.5	yes
East Douglas Creek:	1.0	
above Brush Creek	1.5	no
above Cathedral Creek	1.5	no
Lake Creek	1.5	yes
Soldier Creek	1.5	yes
Trapper's Creek	1.0	no
West Fork, Fawn Creek	2.0	yes

NON-GAME FISH

A complete survey of fish species occurrence and distribution in this resource area has not been conducted. Based on various sources, the following species have been documented as occurring within the resource area:

Native non-game fish	Exotic non game fish
speckled dace	common carp
bluehead sucker	red shiner
flannelmouth sucker	fathead minnow
mottled sculpin	plains topminnow
mountain sucker	plains killifish
roundtail chub	mosquitofish

The speckled dace is thought to be the most prevalent and widely distributed of native non-game fishes, appearing regularly in most perennial stream systems in the Piceance and Douglas geographic reference areas (GRAs). The remaining suckers and chub are believed to be primarily confined to the White River and its larger tributaries. Sculpin are found throughout the White River, but representation becomes increasingly weak below Meeker. Except for the White River below Taylor Draw dam (see below), populations of native non-game fish are presently believed to be stable. Although many of these fish are considered more tolerant of degraded habitat conditions than most trout species, it is likely that population status and distribution has declined as the result of historic stream deterioration. Recent and continuing improvements of riparian and aquatic habitat conditions resource area-wide is likely maintaining or improving long-term habitat suitability and habitat extent for these fish.

Native fish populations dominated the White River drainage in Colorado (98 percent) prior to closure of Taylor Draw dam in 1984. Since then, exotic red shiner, fathead minnow and, to a lesser extent, common carp and predatory sportfish have become increasingly frequent in collections from the lower White River, accounting for 36 percent of the sample population one year after dam closure (Martinez 1986). It is uncertain whether this trend will continue or stabilize, or what degree of influence exotic fish will have on native fish reproduction or recruitment. Aquatic conditions that have developed both within and below the reservoir have potential to promote the continued proliferation of exotic fishes and may seriously affect native fish populations from the standpoint of resource competition and predation.

The population status and distribution of the plains killifish, plains topminnow and mosquitofish are unknown. These introduced species could be expected to occur in shallow, slower moving or still waters available in the lower White River and presumably in stockponds and larger perennial streams throughout the resource area. The plains topminnow is a candidate for listing under the *Endangered Species Act* on Colorado's eastern slope--its status here as an introduced species exempts candidate status.

SPECIAL STATUS WILDLIFE

PEREGRINE FALCON (Federally Endangered)

There is no information indicating historic peregrine nesting in this Area. A well established peregrine population (eleven eyries occupied in 1993) exists along the Green and Yampa Rivers, principally in Dinosaur National Monument. It is presumed that falcons regularly pass through the entire resource area during spring and fall migration. The Upper Wolf Creek drainage, Moosehead Mountain and Stuntz Ridge (all just south of Dinosaur National Monument) are probably visited occasionally during the nesting season.

The Parachute and Roan Creek drainages south of the resource area have had persistent reports of peregrine use. During the spring and summer of 1975, four peregrine observations were made in the vicinity of oil shale Tract C-a, in the center of the Piceance Basin. These reports coincided with purported peregrine activity in Parachute Creek, about 20 miles southeast of C-a. No reports of sightings have been received since then.

BALD EAGLE

Bald eagles occur primarily as winter residents and migrants, with a small, but regular contingent of nesting pairs. Migrant and winter residents arrive in October and leave by mid-April. Mid-winter (December-February) populations on the White River vary from 50-70 birds, with migratory peaks up to 160 birds. Breeding pairs begin nest selection and establishment in early February, and if successful, young are fledged by mid-July. Areas of concentrated use are closely associated with rivers and larger creeks (i.e., White and Yampa Rivers, and Piceance, Coal, and Milk Creeks). Some nocturnal roosts have been identified in riverine cottonwood stands and douglas fir stands within two miles of the White River.

Migratory and wintering eagles scavenge extensively in open vegetation types. The Crooked Wash, Colorow Gulch, and Stedman Mesa areas are identified as concentrated winter use areas.

One to two nesting attempts have been documented annually in the White River Valley since 1980. These nests have been located in riverine cottonwoods, although there are historic reports of cliff nests. Nest and winter roost locations, as well as concentrated eagle use areas, are almost entirely confined to private lands.

CRANES

Whooping (federally endangered) and greater sandhill crane use of the resource area is considered incidental migration-related stopover. Greater sandhill cranes (State-listed threatened) are primarily migrants in the resource area, although historic (1900-1910) nesting along the Upper White River occurred, and recently (1988-1991) a pair successfully nested in irrigated hay meadows east of Meeker. Large autumn migration flights are consistently observed in western Rio Blanco County, particularly across Douglas Pass. Small groups of birds (2-30) make regular short-term use of irrigated meadows, sheetwater flats, broader drainage bottoms and reservoir margins during migration.

Small numbers of whooping cranes accompany greater sandhill cranes through northwest Colorado during migration. A single adult whooper with three sandhills was reported in Piceance Basin in May, 1976. A young whooping crane was attacked and mortally wounded by an eagle south of Rangely in October, 1980. Other observations include two whooping cranes with 50-60 sandhills in irrigated hay meadows three miles south of Meeker in September, 1986, and a single whooping crane with two sandhills along the White River in April, 1989. Several additional birds have been observed accompanying large migratory flocks of sandhill cranes, usually in the Douglas Pass area.

BLACK-FOOTED FERRET

A number of special status species are currently or potentially associated with prairie dog ecosystems in the resource area. There is ample evidence that the federally-listed black-footed ferrets were distributed throughout

Colorado in active prairie dog towns. The latest northwest Colorado records came from animals captured from Moffat County in 1941 and 1942; with earlier specimens taken from Rio Blanco County near Meeker. Prior to 1985-86, attempts to prove persistent, BLM reports of ferret observations, particularly along Highway 40 between Elk Springs and the Utah border, were unsuccessful. Post-1986, ferret reports have been much reduced and continued surveys have yielded negative results. Based on this information, it appears very unlikely that viable ferret populations remain in the resource area.

Beginning in 1985 and continuing through 1986, a suspected outbreak of sylvatic plague reduced prairie dog populations in this resource area by 74-97 percent. Based on occupancy rates and animal densities, 1990 population levels were 50-60 percent of the pre-plague population.

The support of one ferret family requires approximately 500-1500 acres of suitable habitat (depending on prairie dog density) or a stable prey base of 750+ prairie dogs. Ferret interchange between prairie dog colonies spaced less than 11 miles apart occurs regularly, however, none has been observed between colonies separated by 24 miles or beyond.

White-tailed prairie dogs occupy over 64,865 acres of saltbush/sagebrush and grassland habitats, primarily north of the White River from Pinyon Ridge west to Utah. Table 3-23 is a breakdown of prairie dog distribution by area based on BLM inventories of BLM land in 1976 and 1985.

Portions of the prairie dog complex encompassed by this resource area are being evaluated for suitability as potential sites for reestablishment of self-sustaining populations of black-footed ferrets (i.e., lower Wolf Creek and Coyote Basin).

Table 3-23. Prairie Dog Distribution

Area	Acres
Wolf Creek (east of Miller Creek)	30,174
Coal Oil Basin	11,855
Upper Red/Twin Wash	8,532
Crooked Wash	7,369 (gross estimate)
Lower Red Wash	3,760
Shavetail Wash	1,630
Blue Mountain	1,335
Dragon Trail	191
Stedman Mesa	20 (incomplete)

Preliminary work (1989-90) indicated that all prairie dog complexes within the Area meet the general criteria for suitable ferret habitat: prairie dog complexes composed of colonies exceeding 1000 acres, intercolony distances less than or equal to 4.4 miles, and 20 or more burrow openings per hectare (8/acre). About 20 percent of the Wolf Creek complex meets or exceeds the minimum desired density index of 40 active burrows/hectare.

MEXICAN SPOTTED OWL

No substantiated sightings of Mexican spotted owls have occurred in the Area, although northwest Colorado contains suitable spotted owl habitat. That habitat consists of steep canyons with rocky cliffs, and multilayered, uneven-aged stands of old growth conifers that exhibit high canopy closure and stand density with many downed logs and snags. Pinyon/juniper and Douglas-fir forest types meeting these criteria are currently considered potential habitat.

Spotted owls nest in stick nests built by other birds, debris platforms, cliff ledges, potholes, and tree cavities. Foraging owls require habitats with open shrub understories and abundant small mammalian prey. Year-round conditions may be found at mid-elevation sites (6000-8000 feet) with varied habitats.

UPPER COLORADO RIVER BASIN FISH

All waters within the Area are associated with the Upper Colorado River Basin and its complement of endangered fishes: Colorado squawfish, humpback chub, razorback sucker and bonytail chub. Recent *Federal Register* notices have included flannelmouth suckers and roundtail chubs as candidates for listing.

The White River is used throughout the year by adult and fewer subadult squawfish. Squawfish currently represent less than 1 percent of the White River's fish community. Following closure of Taylor Draw dam in 1984, squawfish are confined to the lower 32.5 miles below the dam. Large numbers of squawfish used the 47 river miles above the reservoir as indicated by heavy and prolonged congregations of post-spawn fish below the dam in 1985. An experimental squawfish stocking program (1988-90) above the dam met with little success and has been discontinued.

The White River does not appear to support spawning activity, young-of-year nurseries or juvenile concentration areas for squawfish, however, portions of the lower White River in Utah serve as concentration areas for both adults and juveniles. Conditions for native fish populations in the White River, including Colorado squawfish, have generally deteriorated since the closure of the Taylor Draw dam (see Non-game fish).

Razorback sucker, humpback chub, or bonytail chub do not inhabit the White River, however, roundtail chub and flannelmouth sucker are found throughout the Lower White River. In a study investigating the effects of Taylor Draw Dam, roundtails decreased in abundance from 1983-85, while flannelmouth populations increased. Native fishes dominated the study area until 1985 when non-native fish proliferated within Kenney Reservoir.

The White River remains important as a flow contributor to downstream fisheries in the Green River in Utah, which hosts vital nursery habitat and most of the Upper Colorado River Basin's remaining spawning and juvenile concentration areas. Kenney Reservoir is reportedly operated on a run-of-river basis, which generally maintains natural flow regimens. The Recovery Plan for Upper Colorado River Basin fisheries addresses the major threats associated with these fisheries, including: loss and modification of habitat from additional dams, flow reductions, water contamination, and the continued proliferation of exotic fishes in these rivers.

Effective 20 April 1994 the White River and its 100-year floodplain from Rio Blanco Lake to Utah was designated by the USFWS as "critical habitat" for all listed Colorado River fishes. The designation encompasses physical or biological features essential to the conservation and eventual recovery of the species and represents an area that may require special management consideration or protection.

Section 7 Consultation with USFWS is required prior to authorizing any federal action that may adversely modify critical habitat. Activities within the 100-year floodplain that may adversely affect essential elements of critical habitat and warrant additional scrutiny include non-native sport-fish management, deterioration of bank, channel, or floodplain function (e.g. rip-rap, dredging, and incompatible surface disturbance or grazing practices), and those land uses that may alter flow volume or timing (i.e. depletion) or result in contamination.

USFWS has determined that any federally authorized depletion from the Upper Colorado River Basin has an adverse affect on listed Colorado River fishes. The cumulative effect of minor flow depletions is the most common impact associated with BLM management and involves mineral operations (oil and gas development, extractive mining), major pipeline construction (pressure testing), livestock and wildlife water development, and soil and watershed improvement practices.

Depletions adversely influence listed fish populations by reducing peak spring and base flows that limits access to and the extent of off-channel waters (e.g. backwaters, eddies, oxbows) as habitats necessary for larval and young-of-year rearing areas (i.e. downstream). Attendant reductions in flow velocity and depth deteriorate riverine conditions necessary for spawning and overwinter survival of adult fish. Introduced fish populations, many of which are strongly competitive with or predatory on endemic fish, are also favored under moderated flow regimes.

A programmatic biological assessment (see Chapter 2, Water Depletions Section) developed by BLM's Colorado State Office addresses the cumulative effects of minor (less than 125 acre-feet per year) depletions on listed fishes caused by BLM activities or implicit to routine BLM land use authorizations. Total planned (new) and ongoing (historic) depletions in the Area are estimated to involve about 73 acre-feet per year. Projected statewide BLM-authorized depletions represent a 0.1 percent increase in Basin-wide depletions or about 0.3 percent of remaining natural flows. Although small, this Area contributes to cumulative depletions within the Basin and is considered party to adverse alteration in the absolute quantity or seasonal patterns of flow.

FERRUGINOUS HAWK (Category 2 Candidate)

Ferruginous hawks are evenly distributed from Elk Springs west to Dinosaur and south to Rangely. Their distribution is essentially coincident with that of white-tailed prairie

dogs. Occasional birds have been noted wintering in the same general areas.

A ferruginous hawk monitoring study conducted from 1981 to 1988 by Western Fuels-UT (ERO Resources Corporation) provided site specific information pertaining to the breeding biology, prey habits and availability, and effects of disturbances during the nesting season on ferruginous hawks. Nest season chronology is detailed in Table 3-24.

Table 3-24. Ferruginous Hawk Nest Season Chronology

Activity	Mean	Range
Arrival on Breeding Territories	late February April 13-23	late February
Egg Laying Period	May 18-28	April 3 - May 10
Hatching Period	July 1-11	May 8 - June 14
Fledging Period		June 20 - July 28

Ninety-four nest sites distributed among approximately 45 breeding territories were defined at the end of the 1988 season. Live junipers were the most common nest substrate (59 nests), with the remainder located in dead junipers (5), on the ground or on promontories (9), or on artificial nest platforms (21) built from 1981-86 as part of Western Fuels mitigation program. Nests were more likely to be occupied when human activity levels within 1 mile were low. Platform nests that showed evidence of rubbing by livestock were less likely to be occupied (32 percent lower) or produce young (50 percent lower) than nests with unrubbed supports.

NORTHERN GOSHAWK (Category 2 Candidate)

Goshawks are considered a higher elevation raptor, preferring coniferous or mixed forests, although deciduous trees are used in some areas. Pinyon/juniper woodlands are not usually considered optimal habitat, but four goshawk nests have been located in this type in the Piceance and Douglas Basins. Goshawk breeding activity has been observed in Douglas-fir dominated areas in Timber Gulch and it is assumed that Douglas-fir stringers in Upper Piceance Basin and Upper Douglas Creek are suitable habitat. Mature aspen woodlands on Oak Ridge, Wilson Creek, and Upper Piceance Basins also provide suitable goshawk habitat. In mountainous situations, hawks reportedly nest on flat areas near steep inclines.

SHARP-TAILED GROUSE (Special Status Candidate)

Sharp-tailed grouse have been recorded in aspen, mountain shrub and sagebrush habitats in the Wilson Creek drainage and the Nine Mile/James Creek complex. The extent of BLM land where known or suspected populations of grouse occur is limited. The largest parcels are located on Thornburg Mountain and Milk Creek, north of Yellowjacket Pass, and along ridges between Good Spring Creek and James Creek.

ADDITIONAL CANDIDATE SPECIES

Some other animals being reviewed as candidates for listing under the Endangered Species Act occur or are suspected of occurring with the resource area (Table 3-25). These populations by merit of habitat association, distribution, or status are not normally considered adversely affected by land use activities within the resource area. However, the status and distribution of many of these species (particularly reptiles and amphibians) is poorly defined.

Table 3-25. Federal Candidate Animals Currently or Potentially Inhabiting Resource Area

Species	Resource Area Status	Habitat Affinity	Management Application
Spotted bat	uncertain, widespread, but uncommon in Blue Mountain area	arid canyons, cliffs, riparian areas	direct involvement rare, emphasized riparian/aquatic management likely improving extent and suitability of foraging sites

Table 3-25 continued

Species	Resource Area Status	Habitat Affinity	Management Application
North American wolverine	uncertain, historical records on Grand Hogback and Danforth Hills, several recent records	higher elevations, including mountain browse/aspen associations	coal leasing tracts, to date, no extensive alteration of potential habitats
Southwest otter	uncertain, historical occupation of White River drainage, no recent evidence of occupation	larger streams and lakes with fisheries	riparian, aquatic, and fish habitat management
Western snowy plover	rare spring migrant: three records at Rio Blanco Lake, probably Kenney Reservoir	lake and large river margins, mudflats	potential habitat unavailable
Mountain plover	uncertain, possibly rare breeder: one documented record (Mormon Gap/Coyote Basin)	sparse sagebrush/grassland, often associated with prairie dogs	oil and gas and coal development, but since establishment of Rangely field in the 1940's, no significant involvement of potential habitat
Black tern	uncommon migrant, many spring records on Rio Blanco Lake, Divide Creek Reservoir	open water marshes for breeding, larger ponds and reservoirs during migration	suitable habitat extremely limited, otherwise no management conflicts
Loggerhead shrike	common breeder	low elevation pinyon/juniper, sagebrush, greasewood, and salt desert types	suitable habitat fairly extensive, no significant involvement anticipated
White-faced ibis	uncommon spring migrant across resource area in suitable habitat, especially White River Valley	shallow pond/lake margins, hayland and wet meadows	suitable habitat limited in extent, with riparian emphasis, suitable habitats stable
Columbian sharp-tailed grouse	uncertain, believed uncommon and very localized resident, sporadic reports from Nine Mile Gap area	mountain browse, sagebrush, aspen complex	potential effects associated with coal leasing, livestock grazing, but land base negligible, too fragmented and isolated for effective management
Boreal western toad	uncertain, has been recorded on White River at and above Buford, potentially suitable habitat presumably available throughout the resource area at higher elevations	marshes, wet meadows, stream margins above 8500 feet, rarely below 7000 feet	emphasis on riparian and aquatic protection and restoration coincident with general habitat requirements, current condition and extent of such habitat stable to improving

WILDERNESS

As shown in Table 3-27, there are six wilderness study areas (WSAs) in the White River Resource Area. Three have been recommended to Congress for wilderness designation, and three have been recommended for uses other than wilderness (see Wilderness Section, Chapter 2).

All of the WSAs were studied under Section 603 of the *Federal Land Policy and Management Act* (FLPMA). They were included in the Craig District *Final Wilderness Environmental Impact Statement* published November 5, 1990, and in the Craig District Study Areas *Wilderness Study Report* published October 1991. The attributes of each WSA are described in these two documents.

Table 3-26. Wilderness Study Areas Recommendations

WSAs Recommended for Wilderness Designation	Size of Existing WSA	Acres Recommended for Designation	WSAs Not Recommended for Wilderness Designation	Acres
Bull Canyon (Colorado)	12,297[1]	13,700[2]	Black Mountain	9,932
Willow Creek	13,368	13,503[3]	Windy Gulch	12,274
Skull Creek	13,740	14,050[4]	Oil Spring Mountain	17,740
Total	38,885	41,253	Total	39,946

[1] Includes BLM acres in Colorado and Utah.
[2] Excludes 320 private acres within the WSA boundary and includes 1,550 acres BLM land in Colorado and Utah outside the existing WSA boundary.
[3] Includes 135 acres BLM and state land outside existing WSA boundary.
[4] Includes 310 acres of BLM land outside existing WSA boundary.

WILD AND SCENIC RIVERS

The National Wild and Scenic Rivers System was created by Congress to preserve selected rivers in natural free-flowing condition. Section 5(d) of the *Wild and Scenic Rivers Act* of 1968 provides for the identification of potential rivers through BLM Wild and Scenic River Studies that include input from the BLM and resource specialists.

The 1980 National Rivers Inventory, conducted by the National Park Service, identified no streams in the White River Resource Area as potential wild and scenic rivers.

To be eligible for consideration, a river must be free-flowing and, with its adjacent land area, must possess one or more "outstandingly remarkable" values. The eligibility of a river for the National System is determined by applying the criteria in sections 1(b) and 2(b) of the *Wild and Scenic Rivers Act*, as interpreted by the USDI-USDA Guidelines.

Stream segments and their associated values identified during scoping as eligible for consideration as wild and scenic rivers are listed in Table 3-27.

Table 3-27. Stream Segments Eligible for Wild and Scenic River Consideration

Stream	Study Segment	River Miles	Resource Values
White River, Segment B	Taylor Draw Dam to Shavetail Bridge	22	T&E Fish Habitat, recreation, cottonwood associations
White River, Segment C	Shavetail Bridge to Colorado/Utah border	11	T&E fish habitat, recreation, desert canyon scenery, cottonwood associations
East Douglas Creek	Source to confluence with Tommy's Draw	20	High value-riparian habitat, federal candidate T&E Colorado, River cutthroat trout population and habitat
Cathedral Creek	Source to confluence with East Douglas Creek	14	High value-riparian habitat, federal candidate T&E Colorado, River cutthroat trout population and habitat
Lake Creek	Source to confluence with Cathedral Creek	14	High value-riparian habitat, federal candidate T&E Colorado, River cutthroat trout population and habitat
Bear Park Creek	South to confluence with East Douglas Creek	5	High value-riparian habitat, federal candidate T&E Colorado, River cutthroat trout population and habitat

Table 3-27 continued

Stream	Study Segment	River Miles	Resource Values
Soldier Creek	Source to confluence with Cathedral Creek	13	Relatively undisturbed waterbed, rare sensitive plants, sullivantia parpusii and aquilegic barnebyi, federal candidate, Colorado River cutthroat trout population and habitat
Big Beaver Creek	Source to Lake Avery	18	Federal candidate, Colorado River cutthroat trout habitat and population

VISUAL RESOURCES

Visual resources in the White River Resource Area were inventoried and classified in the 1970's according to visual resource management (VRM) analysis criteria contained in BLM Manual 8410. Visual quality, sensitivity, and BLM visibility were considered. These three criteria were rated, measured and combined to assign a visual resource management class to a specific area. Scenic quality was rated on criteria developed for the Rocky Mountain Plateau Region. Viewer sensitivity was based on traffic volume and distance zones were measured from roads.

The inventory was conducted prior to the passage of the *Federal Land Policy and Management act (FLPMA)* and, therefore, did not consider multiple use management objectives and conflicts. It also did not consider VRM classifications in wilderness study areas (WSA's) since they had not yet been designated.

The visual resources are often the dominant resource value involved in providing high quality outdoor recreational opportunities. Areas with high visual resource management importance include Blue Mountain, Calamity Ridge, and Skull Creek.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Five areas of critical environmental concern (ACECs) are currently designated by decisions made in the Piceance Basin Resource Management Plan. One ACEC was designated through amendment of the White River Management Framework Plan. The existing ACECs and natural resource value are depicted in Table 3-28.

Table 3-28. Areas of Critical Environmental Concern

Name	Resource Value	BLM Acres
Deer Gulch	T&E Plants	1,810
Lower Greasewood Creek	T&E Plants	210
South Cathedral Bluffs	T&E Plants	320
Dudley Bluffs	T&E Plants	1,630
Yanks Gulch/Upper Greasewood Creek	T&E Plants	2,680
Raven Ridge	T&E Plants and Paleontology	2,090

RECREATION

The White River Extensive Recreation Management Area serves the towns of Meeker, Rangely, and Dinosaur and consists of 1,431,589 acres of Public Land. These Public Lands generally complement recreation opportunities available in other areas by providing a wider range of settings for unrestricted activities, such as hunting, hiking, off-highway vehicle use, camping, backpacking, floatboating, fishing, cross-country skiing, snowmobiling, nature study, photography, horseback riding, mountain bicycling, hang gliding, wildlife viewing, picnicking, and cultural/historic site viewing, among others. Visitor use in the resource area is estimated at 150,000 visits annually. Hunting is the dominate recreation activity in the resource are with an estimated 64,000 visitor days annually. Approximately 75 percent of this use is for big game hunting.

Big game hunting contributes substantially to local economies during the fall hunting season. Currently 11 permitted outfitters operate within the resource area and provide services to some 125 hunters for a total use of 13,500 visitor days. Of the total number of big game

hunters using BLM lands in the resource area, over half are from out-of-state, mostly from California and Texas. Approximately 42 percent of the in-state hunters come from the Denver metro area. Eight percent of the in-state hunters are local (Rio Blanco County) and 50 percent are from other areas of the state.

A total of 268,000 acres, in four separate areas in the Piceance Basin geographic reference area (GRA), have been administered as the Piceance Special Recreation Management Area (SRMA). Mule deer herds that range the area are a part of the largest migratory herd in North America. Elk and mountain lion reside throughout the area as well. Big game hunting is the primary activity and attracts some 60,000 hunters from around the nation each year. Camping and off-highway vehicle use occurs mainly as spinoffs from hunting. However, another 5,000 visitors engage in other activities such as snowmobiling, hiking, viewing wildlife, off-highway vehicle travel, camping, and small game hunting.

The six wilderness study areas within the resource area provide outstanding opportunities for scenic, scientific, and primitive types of recreation activities in natural settings and these areas are experiencing increased use.

Within the Blue Mountain GRA, the Moosehead Mountain road closure area, and the Bull Canyon, Willow Creek and Skull Creek WSAs exhibit exceptional scenic, geologic, ecologic, natural, and cultural diversity. These areas provide exceptional opportunities for primitive recreation pursuits in relatively unrestricted settings.

The White River GRA provides opportunities for river floatboating, fishing, and camping. The White River is largely inaccessible due to privately owned lands that presently block public access and the difficulty of identifying public lands along the river. Canoeing and kayaking use on the White River is increasing, is being marketed in several publications, with use estimated at 700 visitors annually. Use is seasonal and includes an estimated 33,750 visitor days of use annually for whitefish fishing.

Within the Douglas/Cathedral GRA, Canyon Pintado National Historic District contains significant Native American rock art sites and the town of Rangely has developed 16 interpretive sites on public land in the Rangely area. This resource is being marketed through various media and has increased visitor use in the area. one picnic area and toilet facility is developed on the area.

Approximately 200 miles of mountain bike trails have been developed (i.e. Rangely Loop Trail and Dinosaur Trail) and use is low at this time. However the town of Rangely has developed a color brochure to market recreation assets in the area and use is expected to increase in the area.

All but 10,600 acres in the resource area are open to off-highway vehicle use. Most off-highway vehicle use in the resource area is associated with hunting and other recreation pursuits.

MOTORIZED VEHICLE TRAVEL

Except for 15,560 acres that are closed to public motorized vehicle travel (open on designated trails for valid existing rights) (Table 3-29), the entire resource area is open to both on- and off-road travel.

There are no designated off-highway vehicle recreation areas on BLM lands. Motorized vehicle travel use consists of 2- and 4-wheel drives, all-terrain vehicles (ATVs), motorcycles, and snowmobiles. Mountain bicycles also travel both on and off roads. The use of these vehicles is generally involved with hunting activities, sightseeing, and firewood gathering. Concentrations of motorized vehicle use occur during the hunting season and during construction, exploration, and production of other resources.

Table 3-29. Restrictions on Motor Vehicle Travel

Area	Limitation	Acres	Reason
Moosehead Mountain	Closed	7,600	Resource Protection
Oak Ridge	Closed	3,000	Res. Protection (w/CDOW)
All WSAs	Limited-Existing Trails	40,633	Wilderness Value Protection

CULTURAL RESOURCES

The resource area possesses a wide range of environmental and geographic variation that influences the location and nature of cultural and historical resources. Approximately 4,000 archaeological and historical resources have been recorded in the resource area. It is anticipated there are several thousand more sites yet to be recorded and evaluated.

Cultural resources include historic Euro-American sheepherding camps, cattle camps, range and homesteading locations, settlements, historic stage and wagon roads, Proto-historic campsites, trails, lithic scatters and quarry areas, formative age campsites, lithic scatters and quarry areas and may include archaic and Paleo-Indian aged material. However, the Paleo-Indian and Archaic remains may be deeply buried and under represented in the recorded database (Creasman 1981; LaPoint et al 1981; Hauck 1990).

The highest recorded concentration of cultural resources is in the west end of the resource area. This concentration of recorded sites can be directly correlated with energy development. Inventory requirements have resulted in extensive location, recordation and evaluation of cultural resources in the area.

As one moves east through the resource area the recorded site density changes and is lower. This apparent lower density may be due to a lower inventory level. In the western portions of the resource area, resource densities may be as high as one isolated find or site every 9.1 acres (Baker, 1990d). Site densities in the Canyon Pintado National Register Historic District average about one site or isolated find every 52 acres.

In the Piceance Basin, an intensive inventory of the C-a oil shale lease tract resulted in the discovery of a resource density of one per 62.9 acres (McPherson, 1983). These figures have been obtained at low elevations throughout the resource area. Dr. James Grady (1980) has found that as elevation and distance from potable water increase site densities appear to decrease. Dr. Grady's results are based upon limited inventory data but seem to have good applicability across the resource area.

A prominent part of the cultural resource is the wide array of sites that contain rock art panels. Rock art may occur without any other site components or as a component in other site types. Rock art includes modern Basque shepherd work (Baker, 1989, 1990a, 1990b), Barrier Canyon Style rock art of Fremont affiliation (Cole), rock art of Ute age and affiliation, and material of an indeterminate age.

Cultural resources range in size from single, isolated artifacts occupying less than one square meter to large, complex sites occupying more than 1,000 acres. Linear sites such as roads and trails vary in width and may extend for many miles.

By definition archaeological resources are ruins and remains, therefore, the condition of the resource is not pristine. In general, resources are in fair to good condition. Natural deterioration factors include snow and rain while the low average annual precipitation rate favors good preservation of most archaeological and historical remains. Other deterioration factors are closely related to human activity, such as road building, ranching, and off-highway vehicle use. Human activities have the potential to increase the rate of resource loss as compared to the natural processes.

PALEONTOLOGICAL RESOURCES

Approximately 116 known paleontological localities occur within the resource area. Fossils include invertebrates such as insects and ammonities and a wide range of vertebrates including fish, reptiles, dinosaurs and mammals such as *Corophydon, Titanotherium* and *Uintatherium*. To date, efforts to fully inventory fossil resources within the resource area have been spotty and limited in scope. It is quite likely that the presently known 116 localities represent a small fraction of the number of localities present. Under the BLM's current classification system, all vertebrate fossils, and some fossil localities or fossil bearing formations are considered scientifically significant and rated as Class I localities or formations. Among archaic ungulates found in the resource area, Uintatheres are only known from North America and are known to occur in what is known locally as the Uinta Formation (Romer, 1966).

Recent research at the west end of the resource area has resulted in the description of twelve previously undescribed species of primates (Doi 1990) and several species of multituberculates (Archibald 1987). Paleontologists consider multituberculates to be an early form of mammal.

Many fossil plants also exist in the area. Some are an early type of tree similar to the Norfolk Island Pine (Armstrong and Baker 1985). Other types of plant species are present and research is ongoing to identify the particular species and their scientific significance (Wallace 1989).

LAND USE AUTHORIZATIONS

RIGHTS OF WAY

Approximately 700 miles of major linear rights-of-way have been authorized in the resource area. These involve power transmission lines, pipelines of 10-inches in diameter or greater, railroads, and state/federal highways. The vast majority of rights-of-way involving several hundred more miles of authorize minor facilities related to residential uses or mineral developments and are located in areas supporting these developments.

Site-type rights-of-way, ranging in size from one to 30 acres, are found throughout the resource area. These involve various types of communication systems, compressor stations, and gas plants.

The resource area is currently seeing a trend to renew developments in older oil and gas fields. Where increased production occurs, the current infrastructure may not have sufficient capacity, resulting in the need for new gathering lines, or replacement of smaller pipelines. Expansion of the major transmission systems through looping, or additional lines next to older ones, and development of new systems is also occurring. The currently designated corridors are not all fulfilling the needs of these systems. Some corridors cross unsuitable areas due to land slides or slumps while others cross areas that are predominately under private ownership. Radio telemetry for oil and gas metering, and cellular telephone services are examples of systems that are on the rise in the area. They are creating a new demand for the establishment of new sites.

LEASES AND PERMITS

There are currently three active *Recreation and Public Purposes Act* leases, one airport lease under the Act of May 24, 1928, and a Section 302 Lease under the *Federal Land Policy and Management Act* of 1976 (FLPMA). A variety of land use permits, for many uses, including legalization of trespass, have been issued pursuant to Section 302 of FLPMA. These permits have been issued for temporary, short-term uses.

The use of, and interest in acquiring leases under the *Recreation and Public Purposes Act*, has tapered off over the past few years, as has significant community expansion. Continued availability of BLM land for these types of uses generally remains desirable, particularly for land fill purposes. This will continue to involve the town of Rangely since it is still, somewhat, land locked by BLM land, and may also involve the Town of Dinosaur. Although a block of approximately 12,000 acres of private land lies northwest of Rangely, it is within the Rangely field and is devoted to energy development activities. Approximately 5,000 acres of private land are next to Highway 64 in the vicinity of the town but are in the floodplain of the White River or have already been developed. Community expansion to the south, east, or west of Rangely would require the use of BLM land. Similarly, Dinosaur is surrounded by a small amount of private land, much of which is not available for expansion. Very little BLM land surrounds the town of Meeker, and there is no perceived need for BLM lands in terms of community expansion.

TRESPASS

The unauthorized use of BLM land occasionally takes place. These actions generally involve agricultural use, occupancy, linear rights-of-way, and small-scale disposal of household trash. While agricultural trespass tends to occur in areas where highways and/or rivers cut across BLM land corners (which is then cultivated with the adjacent private land), inaccurate property line identification by adjacent landowners or potential BLM land users has been the reason for most trespasses.

LAND TENURE ADJUSTMENTS

LAND ACQUISITION

There has been little, if any, active acquisition program in the past. However, shifts to ecosystem-based management and the introduction of special emphasis programs has led to new interest in the establishment of such a program in the resource area.

DISPOSAL

Although approximately 19,887 acres are currently identified for disposal, disposal programs have been limited in the resource area. In the past several years, one sale involving 2.45 acres was made to resolve an occupancy (residential) trespass. Several parcels of land in the Rangely area were classified as suitable for lease or disposal under the *Recreation and Public Purposes Act* during the early 1980s. Some of these lands have been leased or conveyed. Most recently, two parcels, totaling 103.5 acres, were conveyed for the Rangely town shop and the Rangely golf course.

Demand remains high, however, for sale of isolated parcels east of Meeker in the vicinity of the White River and the White River National Forest. Demand is also high for exchanges. There are currently 15 exchange proposals on file in the resource area, most of which fall into three basic categories:

1. BLM lands east of Meeker and adjacent to the White River National Forest,
2. Mineral-rich lands desired by energy companies in an effort to consolidate mining units, and
3. Small parcels that private land owners wish to acquire for enhancing their operation or to resolve trespass.

The second group of lands lie in the Piceance Basin and may, sometimes, be covered by more than one proposal. The third group of lands are found throughout the resource area.

ACCESS

Based on user complaints and estimates made by comparing land ownership and county road maps, roughly 15-20 percent of the resource area does not have adequate public access. While some of these areas have legal access in a technical sense, it is often restricted to horse or foot travel, which may not be adequate for desired use.

Over the past five years, three easements (perpetual, exclusive) have been acquired to provide public access. Road renovation has also been used to enhance public access.

WITHDRAWALS

Withdrawals reserve and set aside areas of public land from operation of some or all of the public land laws for protection of specific resource values, e.g. recreation, minerals, water power, reservoir sites, etc. Segregative effects of these withdrawals can vary depending on the resource being protected, and may be altered through modification, or eliminated through revocation.

Withdrawn lands are managed to protect the identified resource. If an additional resource is identified, a new withdrawal would be made to protect that resource.

Approximately 866,550 acres of land in the resource area are currently withdrawn or reserved. These lands, the purpose of the withdrawal, and the specific segregation are identified in Appendix G.

FEDERAL ENERGY COMMISSION PROJECTS

Additional lands in the resource area are segregated under the authority of the Federal Energy Regulatory Commission (FERC). These lands are not withdrawn in the same manner as those listed in Appendix G.

The FERC has authority to issue permits and licenses for proposed hydroelectric (waterpower) development projects pursuant to the Federal Power Act (FPA) of June 10, 1920. At any time, when an application is filed, the FERC can issue a license or a permit. Related projects segregate the land from operation of some or all of the public land laws. The extent of the segregation depends on the status of the project.

The BLM, other agencies, and the public have a right to be involved in the planning process, but that process is separate from the one taking place in this document. BLM's responsibility is to note the public land records, and has no authority over the lands once they are included in a project.

There have been seven FERC projects considered in the resource area during the past thirty years. FERC Project 8914 (Taylor Draw/Kenney Reservoir near Rangely) was issued a license, and is the only active FERC project at this time.

WATERPOWER AND RESOURCE WITHDRAWALS

Waterpower and reservoir resource sites are limited in number, irreplaceable, and increasingly scarce. Their retention in Federal ownership provides opportunities for the management of rivers for ecosystem management, as well as meeting future local, regional, and national needs related to agriculture, hydroelectricity, mining, recreation, wildlife, and domestic and industrial uses.

Waterpower and reservoir resource sites in the White River Basin have been identified, beginning with the U.S. Geological Survey in 1916. The basin has 16 developed reservoirs or diversion dams. There are 59 identified undeveloped reservoirs or diversions. Evaluations have determined 33 undeveloped hydroelectric sites. Fifteen of these have been examined as Federal Energy Regulatory Commission (FERC) projects. Project 8914 is the only developed site in the basin. Further information on these sites, which may not encompass all potential sites, is generally available at the Colorado State Office.

Formal identification and protection of these resources does not commit the government to development of the site, or prohibit private use for water resource development. The land may still be entered for other uses, if these uses may not preclude water development.

FIRE MANAGEMENT

Fire management in the resource area is currently covered under the Craig District Fire Management Plan of 1986 and amended 1993.

From 1976 through 1985, the average annual number of fires was 82. Approximately 60 percent of all fires were in the A size class (0 to ¼ acres, usually one or two trees). These small acreage fires usually occur where there is little or no vegetative understory.

The Piceance Basin consists of many drainages supporting mostly sagebrush and grass fuel types. Higher elevations primarily support a mountain shrub type consisting of serviceberry, oakbrush, and grass. Mid-elevational areas in combination with long sagebrush-grass dominated drainages experience nearly all fires occurring in the basin. Generally, pinyon/juniper fires do not attain large sizes.

Historically, existing vegetation mosaics, topography and fuel breaks, have limited fires to 100 to 400 acres in size. The average fire size within the Piceance Basin is approximately 37 acres with only six percent of the total fires in this area exceeding 100 acres in size. One of the largest fires in Piceance Basin occurred in 1982 and burned nearly 500 acres of pinyon/juniper. The largest fire (Burned-Out Fire) burned 3,700 acres of pinyon/juniper, in 1989, on Stedman Mesa.

Another area having the potential to support large size fires is located north of Highway 40 in the Plug Hat and MF Mountain areas. Both areas have had class F fires (greater than 1,000 acres) in the last 10 years. Most fires in these areas, however, have been class A and B sizes.

Approximately 88 percent of the fires have been lightning caused and 12 percent have been man caused (fires of unknown origin with no evidence of lightning will usually be coded as man caused). Thunderstorms generally move from the southwest portion of the area to the northeast. Lightning frequency varying from 500 to 1,500 strikes is not uncommon from a single cell during a single afternoon. During these periods, multiple-fire starts of 20 to 30 fires per day have been experienced. The area has had an annual average of 27 days of multiple-fire starts with single-fire days ranging from 30 to 40 per year.

Areas which present hazardous safety problems to fire crews are, most notably, the northern portion of Oil Spring Mountain, Skull Creek Rim, Bull Mountain, Willow Creek, and the east side of Windy Gulch. These are WSAs with steep inaccessible terrain. Another major concern is oil and gas development that occurs in densely forested areas.

SOCIAL AND ECONOMIC CONDITIONS

The area for economic analysis consists of three Colorado, which for purposes of analysis are called the economic study area (ESA). The three counties are Garfield, Moffat, and Rio Blanco.

The residents within and immediately adjacent to the ESA, along with the users and potential users of the ESA make up the groups that would be affected by actions within the resource area. Population trends and social attitudes of these groups are also described in this section.

POPULATION TRENDS

Table 3-30 shows current population and population changes in the ESA for the period 1980 to 2014. The total population has increased about 2 percent from 1980-1989. Garfield County experienced an increase in population of 21 percent while the other counties experienced decreases. Moffat County had a decrease of 18 percent. The ESA population is projected to increase to 6,859 (+53 percent) by 2014, and Garfield County is projected to have a 104 percent increase. Moffat County is projected to increase by 1 percent, and Rio Blanco County should have a decline of 26 percent.

Table 3-30. Population 1980-2014

County	1980	1985	1989	Percent Change 1980-1989	1995	2000	2014	Percent Change 1980-2010
Garfield	22,972	25,163	27,751	21%	31,714	35,249	46,884	104%
Moffat	13,204	12,617	10,546	-20%	10,992	11,474	13,301	1%
Rio Blanco	6,350	6,,019	5,238	-18%	5,091	4,958	4,674	-26%
Total:	41,527	43,799	43,535	2%	47,797	51,681	64,859	53%

Source: Colorado Division of Local Government, Demography Section

SOCIAL ATTITUDES

Lifestyles in the ESA and resource area are primarily rural. A high value is placed on quality of life, independence, open space, and outdoor recreational opportunities. The communities of Meeker, Rangely, and Rifle are most likely to be socially affected by planning decisions and actions. These communities have lived in the shadow of energy development for 90 years experiencing various boom and bust cycles in mineral development.

Table 3-31. Total Retail Sales in Millions of Dollars

County	1980	1984	1988
Garfield	263.65	366.69	420.90
Moffat	161.68	176.24	116.64
Rio Blanco	70.40	73.24	45.13
Total ESA	495.70	616.20	582.70

Source: Colorado Department of Revenue

RETAIL SALES

Retail sales for the affected counties increased 18 percent during 1980-1988. Garfield County had a 60 percent increase, and Moffat County had a 28 percent decrease; Rio blanco County experienced a 36 percent decrease. Table 3-31 depicts sales in millions of dollars for the ESA.

HOUSING

Housing vacancy rates in all ESA counties were over 10 percent for 1980 and 1986. Vacancy rates less than 10 percent are indicative of a housing shortage. Although Table 3-32 appears to show that all counties could absorb light and perhaps heavy growth with existing housing, the vacancy rates shown may not consider building conditions or whether units are year-round or seasonal.

Table 3-32. Housing Units and Vacancy Rates By County and the ESA

	Garfield		Moffat		Rio Blanco		ESA	
	1980	1988	1980	1988	1980	1988	1980	1988
Total Housing Units	9,345	12,290	9,345	5,727	2,524	3,027	17,138	20,956
Vacant Housing Units	1,214	1,800	1,214	1,722	420	1,166	2,325	5,083
Housing Vacancy Rate	12.99	14.65	12.99	30.07	16.64	38.52	13.57	24.25

Source: Division of Local Government, Demography Section. Local Government Survey.

EMPLOYMENT AND INCOME

Employment in the ESA from 1980 through 1988 increased about 7 percent. Garfield County's employment increased 29 percent, Moffat County decreased 8 percent, and Rio Blanco County decreased 26 percent. The unemployment rate for the ESA in 1988 was 7 percent that is similar to the rest of Colorado. The unemployment rates for the ESA counties during 1988 were: Garfield - 7 percent; Moffat - 9 percent, and Rio Blanco - 6 percent.

During 1988, the largest employment sectors in the ESA were in retail trade (19 percent), and government (18 percent). Because of disclosure problems, information on the service sector is blank, but it is estimated that the services sector is over 20 percent of employment in the ESA. The smallest sector of employment in the ESA in 1988 was miscellaneous agriculture services, which accounted for 2 percent of the work force. In considering the individual counties, a different pattern emerges. Garfield county had 5 percent of work force in mining, 20 percent in retail trade, 31 percent in services, and 16 percent in government. Moffat County had 17 percent work force in mining, 18 percent in retail trade, and 20 percent in Government. Rio Blanco County had 23 percent in mining, 12 percent in retail trade, 14 percent in services, and 29 percent in government.

The resource area derives benefits from expenditures made for recreational activities, many of which are not presently quantified. Tourism (travel) economic impacts in the ESA for 1988/1989 are quantified and are shown in Table 3-33. Travel generated employment for the 1988/1989 period represented about 13 percent of the total ESA employment. Garfield County travel-related employment had 16 percent, Moffat County had 11 percent, and Rio blanco County had the lowest with 4 percent of the employment-related to travel.

The energy-industry-generated employment represents about 24 percent of the total ESA employment for 1988/1989 (Table 3-34). The energy industry-related employment of the total work force was 9 percent for Garfield County, 41 percent for Moffat County, and 58 percent for Rio Blanco County.

Table 3-33. Impact of Travel on ESA Counties - 1988/1989
(Dollar amounts in Millions)

County	Jobs	Annual Wages	Local Taxes	Overall Expenditures
Garfield	2,481	$ 19.8	$ 0.9	$ 96.2
Moffat	700	5.6	0.6	27.5
Rio Blanco	129	1.0	0.1	5.2
Total ESA	3,310	$ 26.4	$ 1.6	$128.9

Source: Colorado Tourism Board, 1989 Tourism Impacts Study by Travel Data Center.

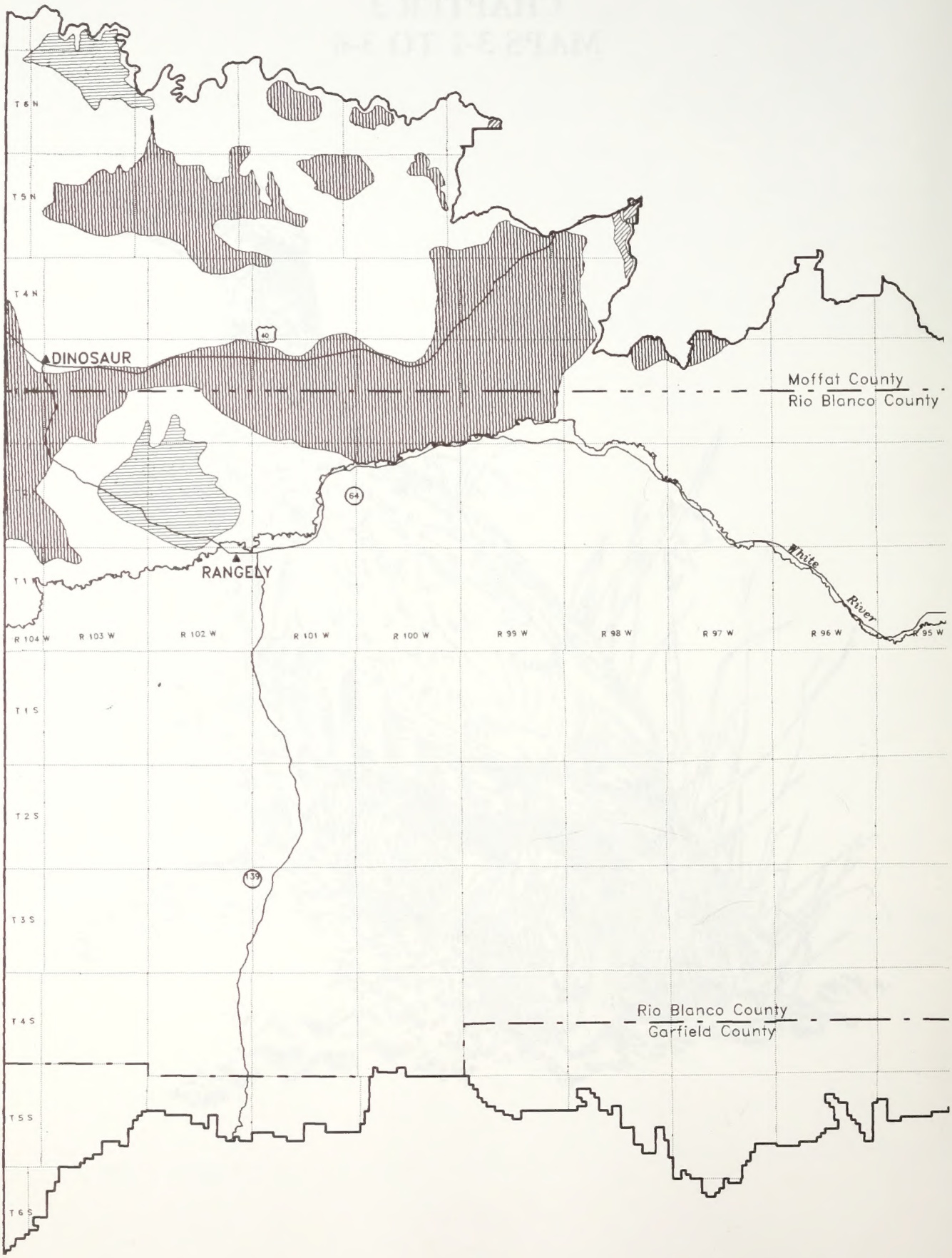
Table 3-34. Impact of Energy Industry on ESA Counties, 1988/1989
(Dollar Amounts in Millions)

County	Jobs	Annual Wages	Local Taxes
Garfield	1,447	$ 36.2	$ 4.3
Moffat	2,542	63.6	13.5
Rio Blanco	1,921	48.9	11.3
Total ESA	5,910	$148.7	$ 29.1

Source: Energy Industry, Colorado Department of Local Affairs Annual Mineral Lease and Severance Tax Report, 1989, and AGNC Unocal Oil Shale Project Study, 1988.

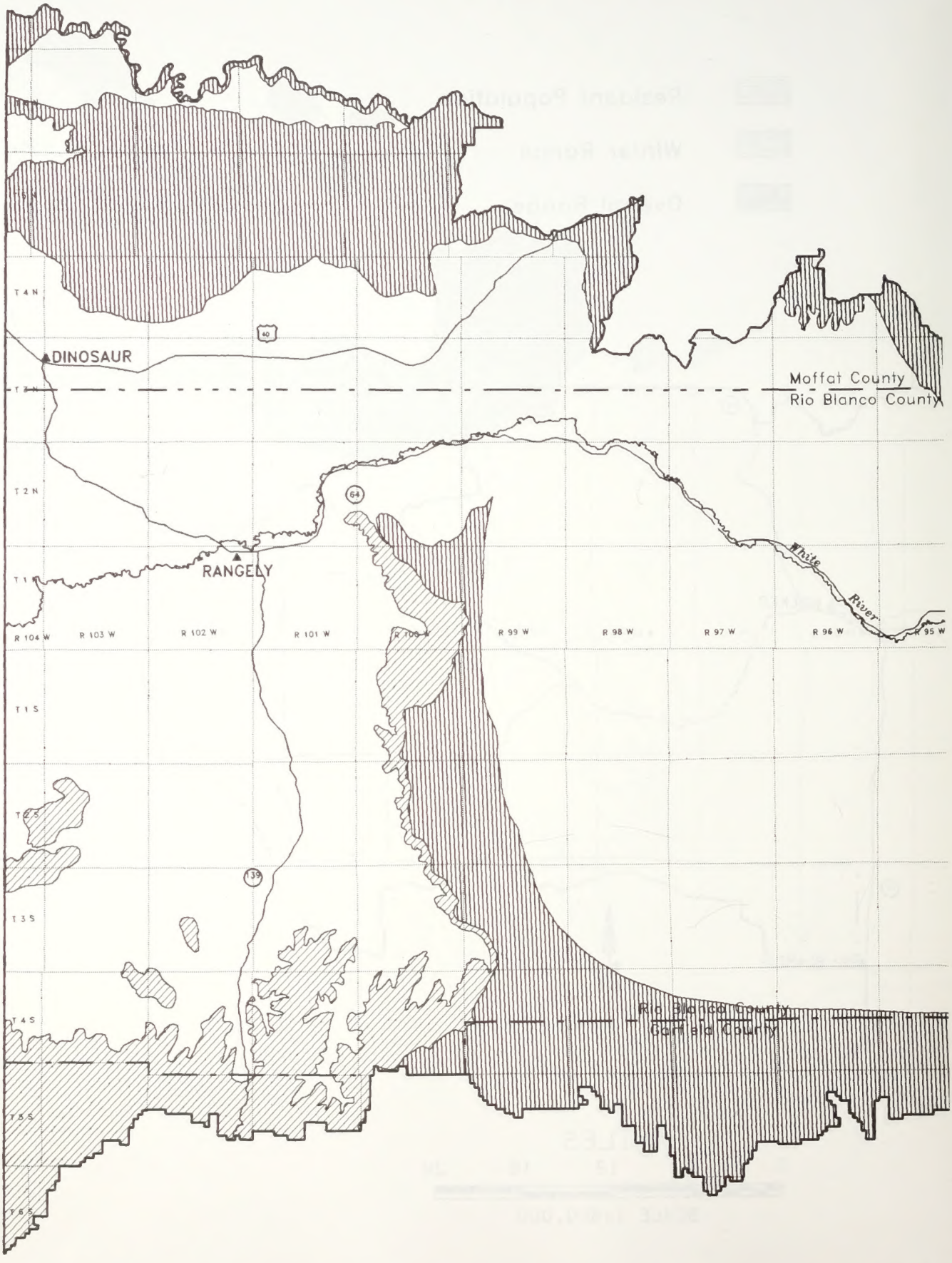
CHAPTER 3
MAPS 3-1 TO 3-6

MAP 3–1. PRONGHORN ANTELOPE SEASONAL RANGES



Resident Population
Winter Range
Overall Range
MEEKER
RIO BLANCO
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
13
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

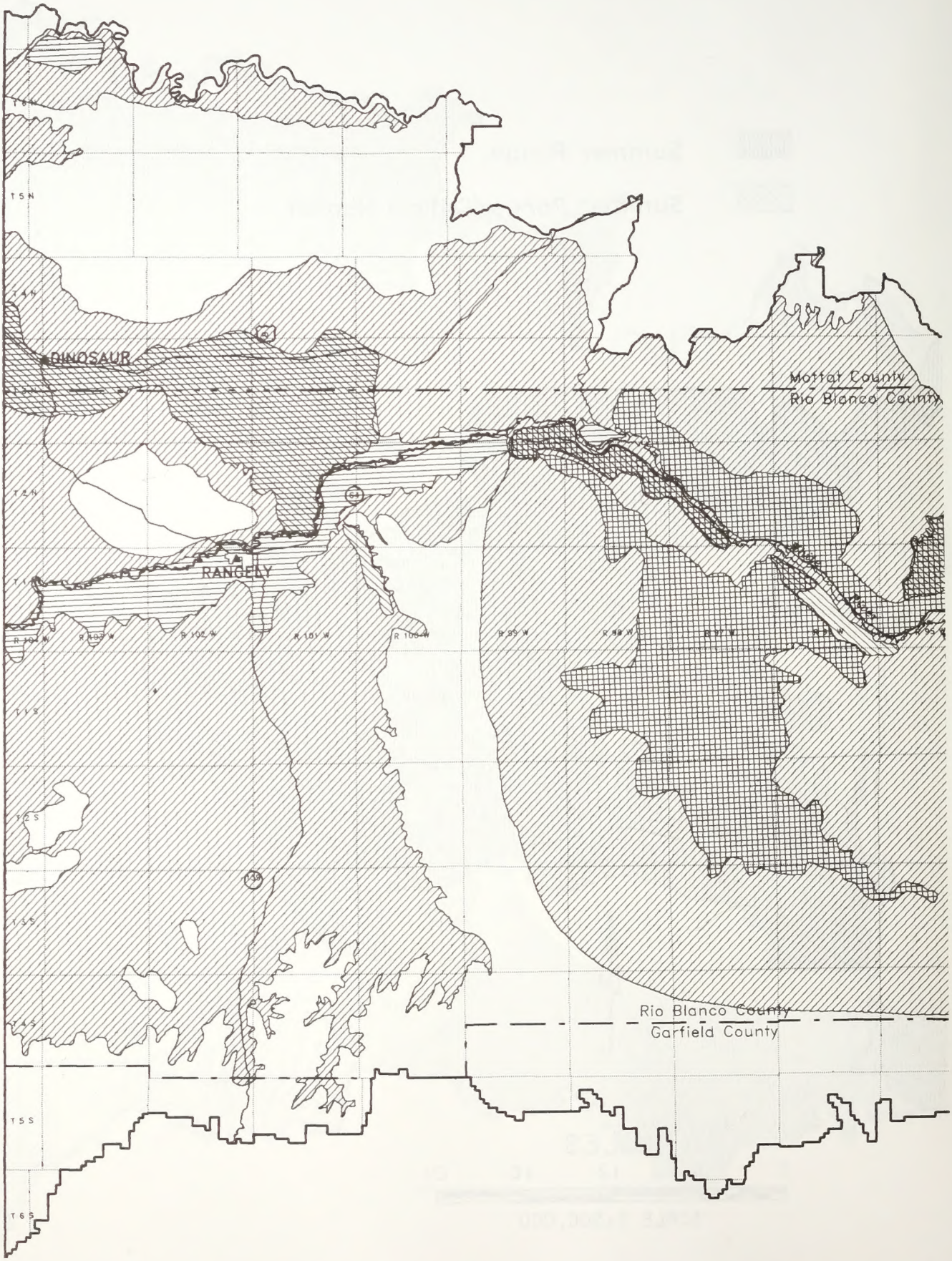
MAP 3–2. MULE DEER SUMMER RANGES

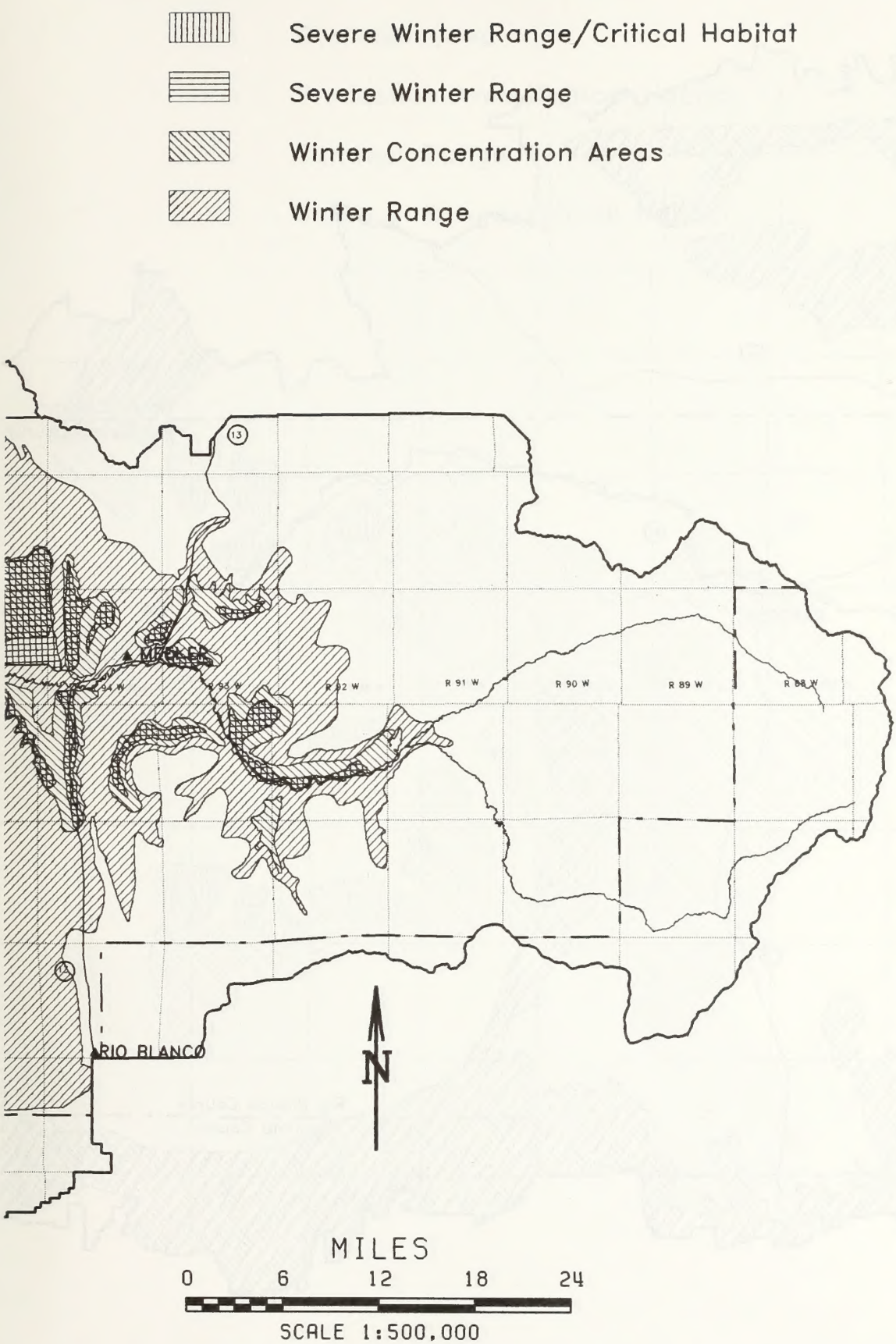


Summer Range
Summer Range/Critical Habitat
MEEKER
R 94 W
R 93 W
R 92 W
R 91 W
R 90 W
R 89 W
R 88 W
N
MILES
0
6
12
18
24
SCALE 1:500,000

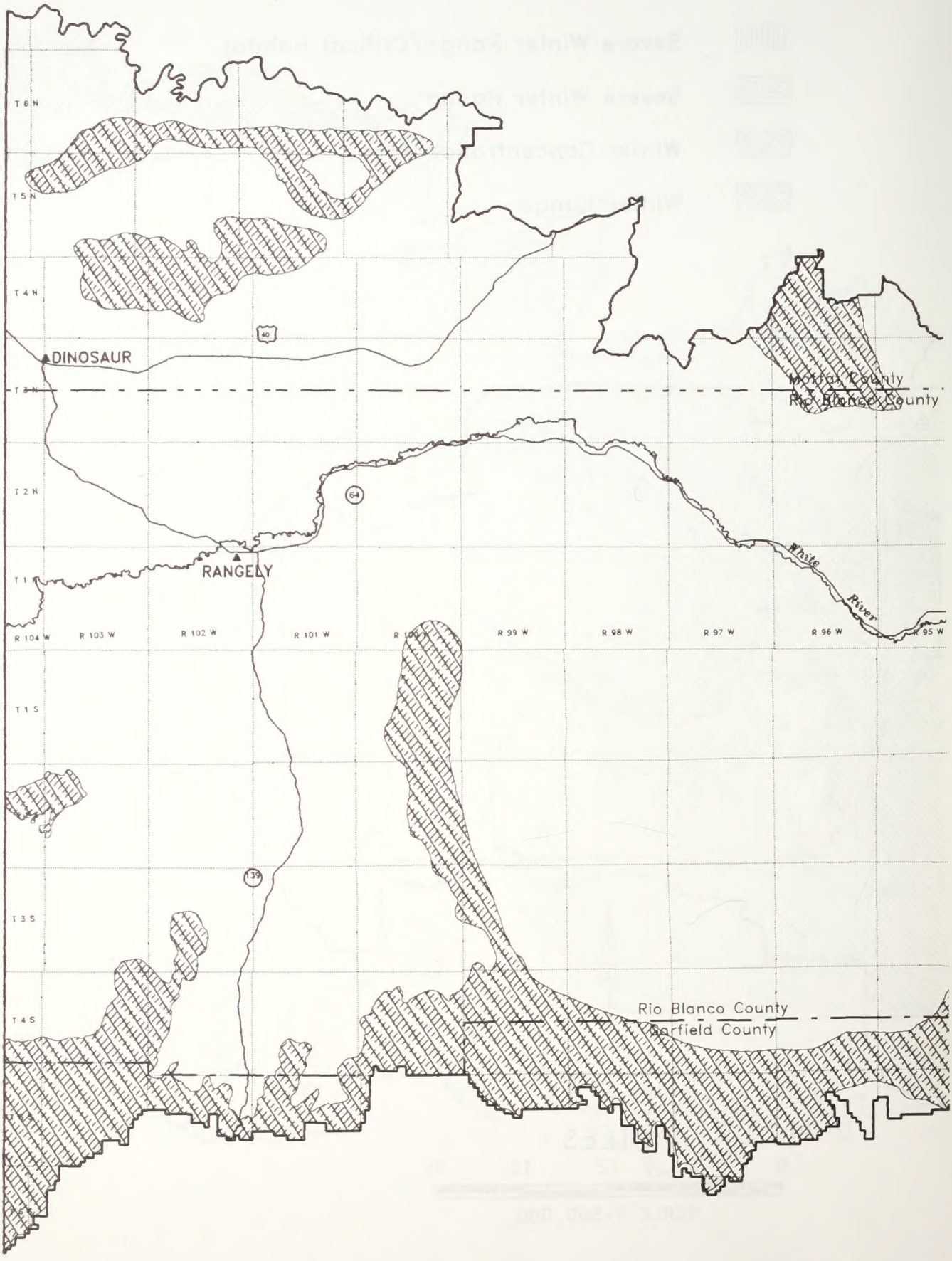
MAP 3-

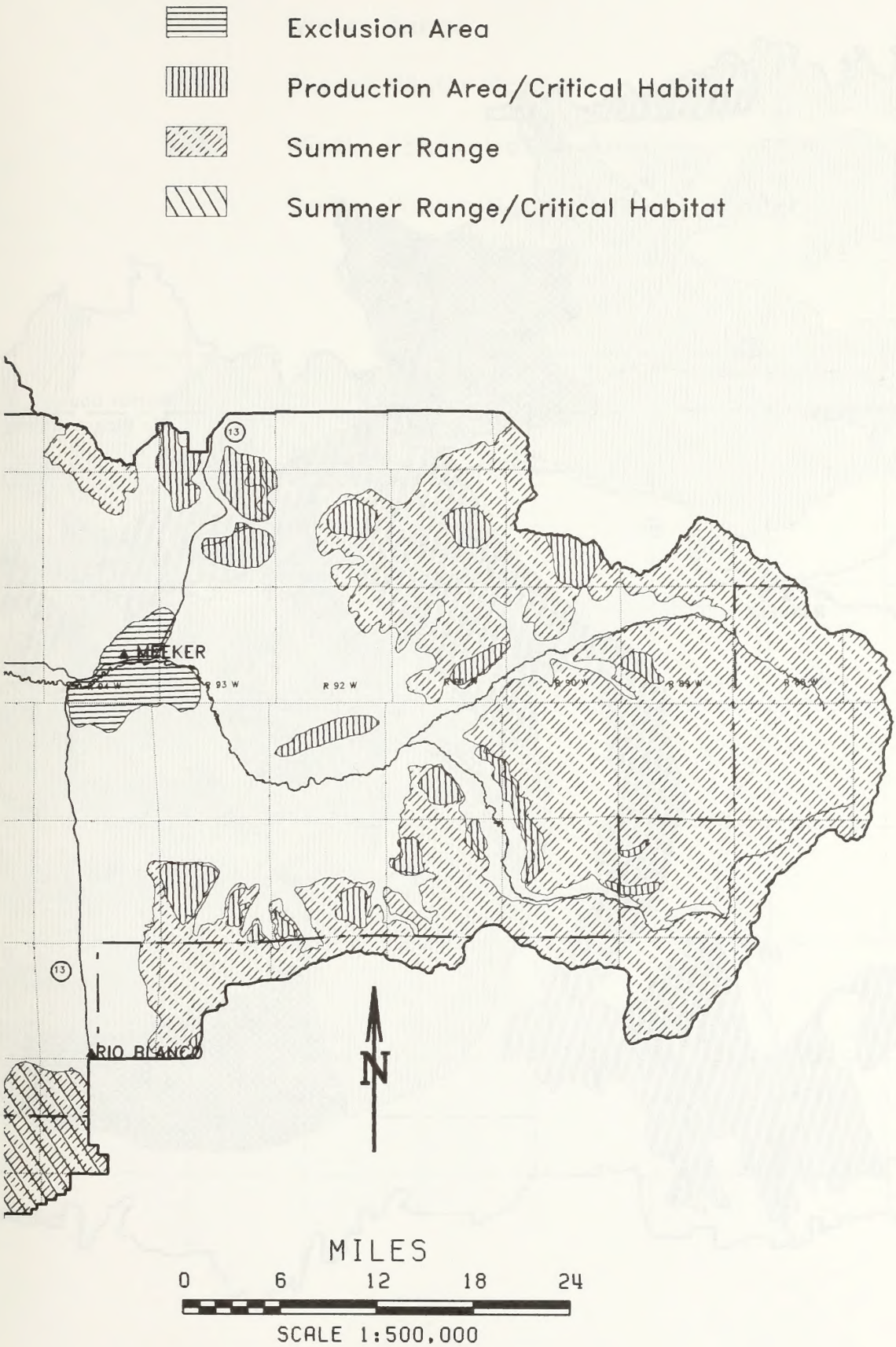
MAP 3–3. MULE DEER WINTER RANGES




Severe Winter Range/Critical Habitat
Severe Winter Range
Winter Concentration Areas
Winter Range
13
MEEKER
94 W
93 W
92 W
R 91 W
R 90 W
R 89 W
R 88 W
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

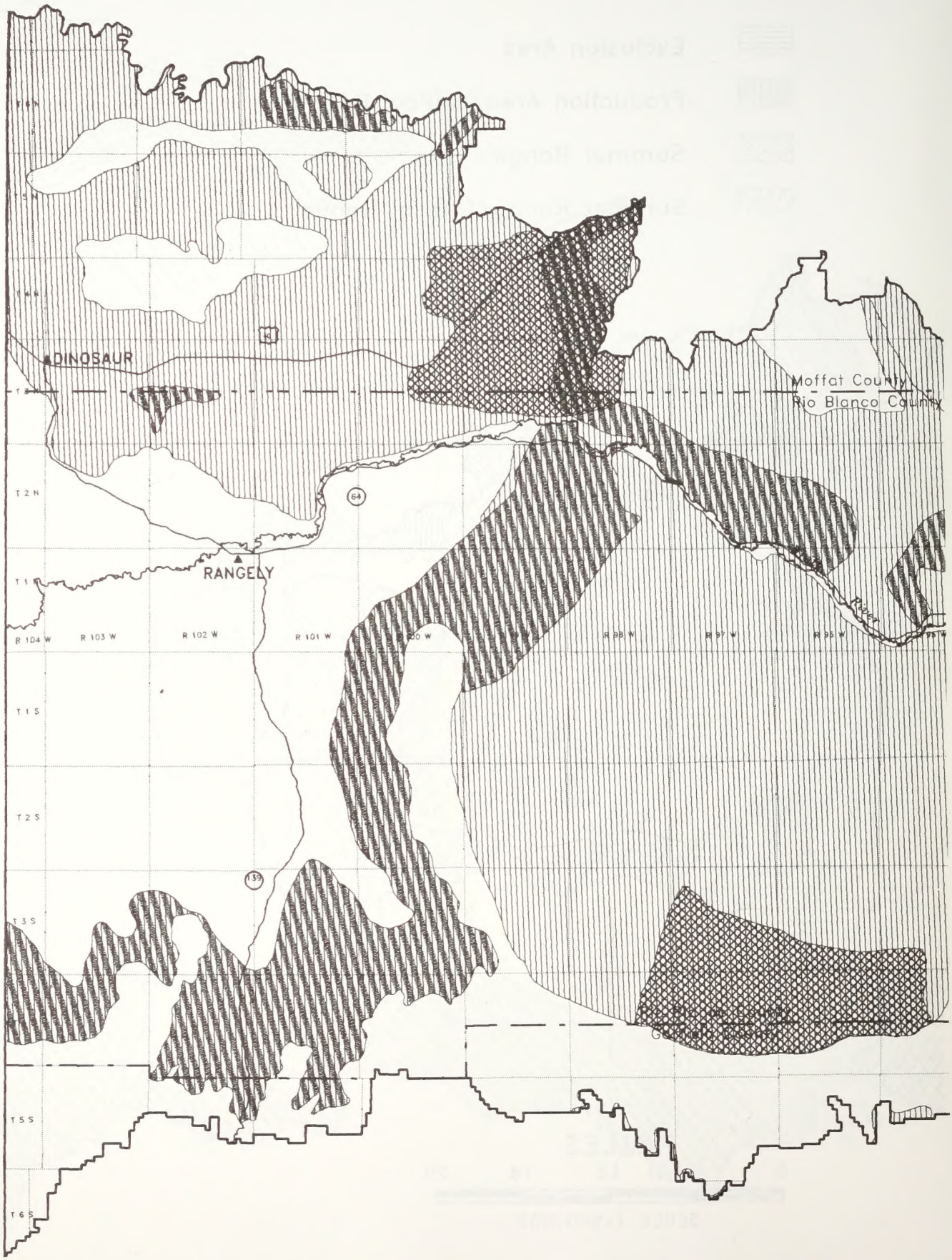
MAP 3–4. ELK SUMMER RANGES

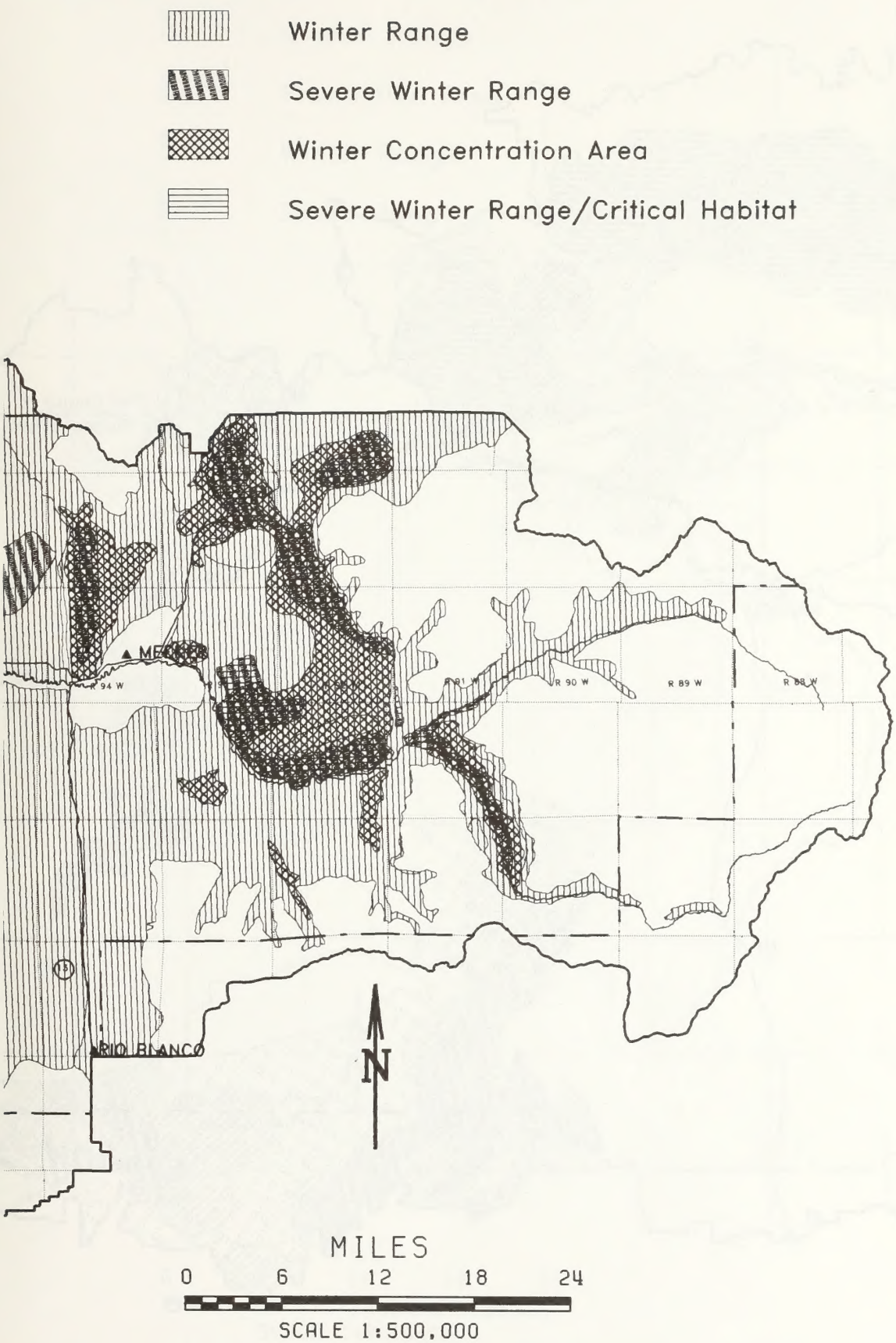



Exclusion Area
Production Area/Critical Habitat
Summer Range
Summer Range/Critical Habitat
13
MEEKER
R 93 W
R 92 W
R 90 W
R 89 W
13
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

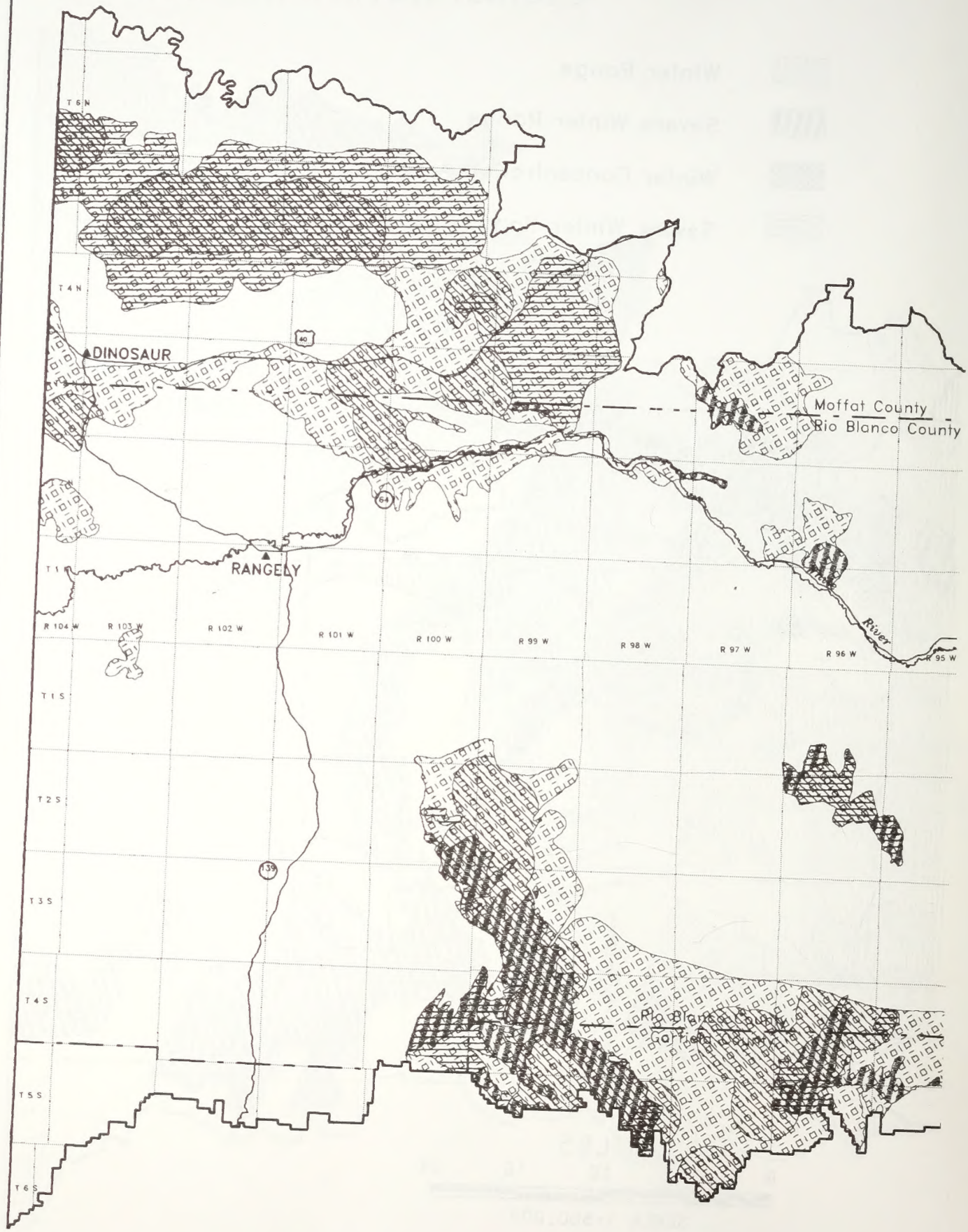
MAP 3-4

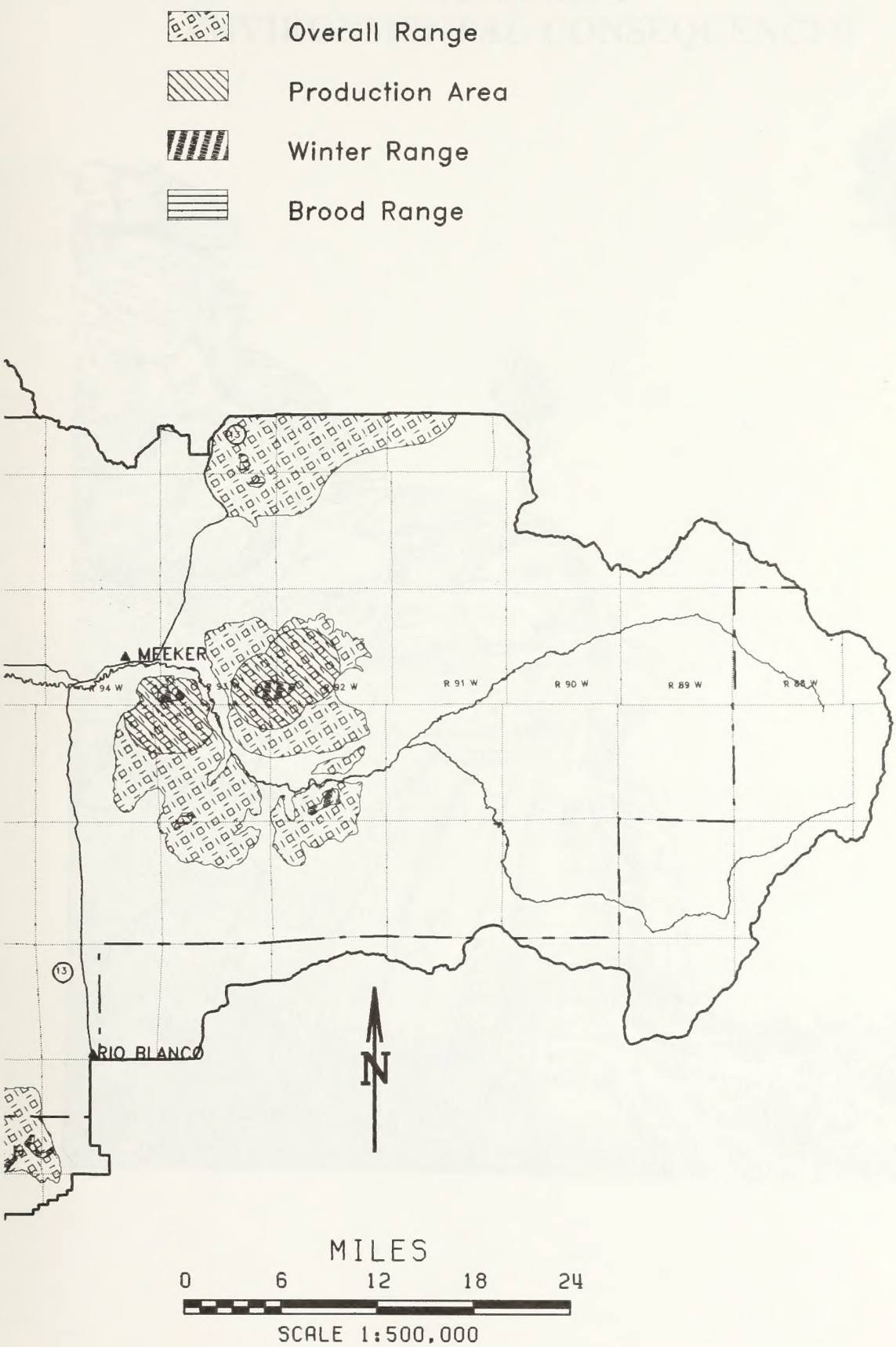
MAP 3–5. ELK WINTER RANGES




Winter Range
Severe Winter Range
Winter Concentration Area
Severe Winter Range/Critical Habitat
R 94 W
R 90 W
R 89 W
RIO BLANCO
N
MILES
0
6
12
18
24
SCALE 1:500,000

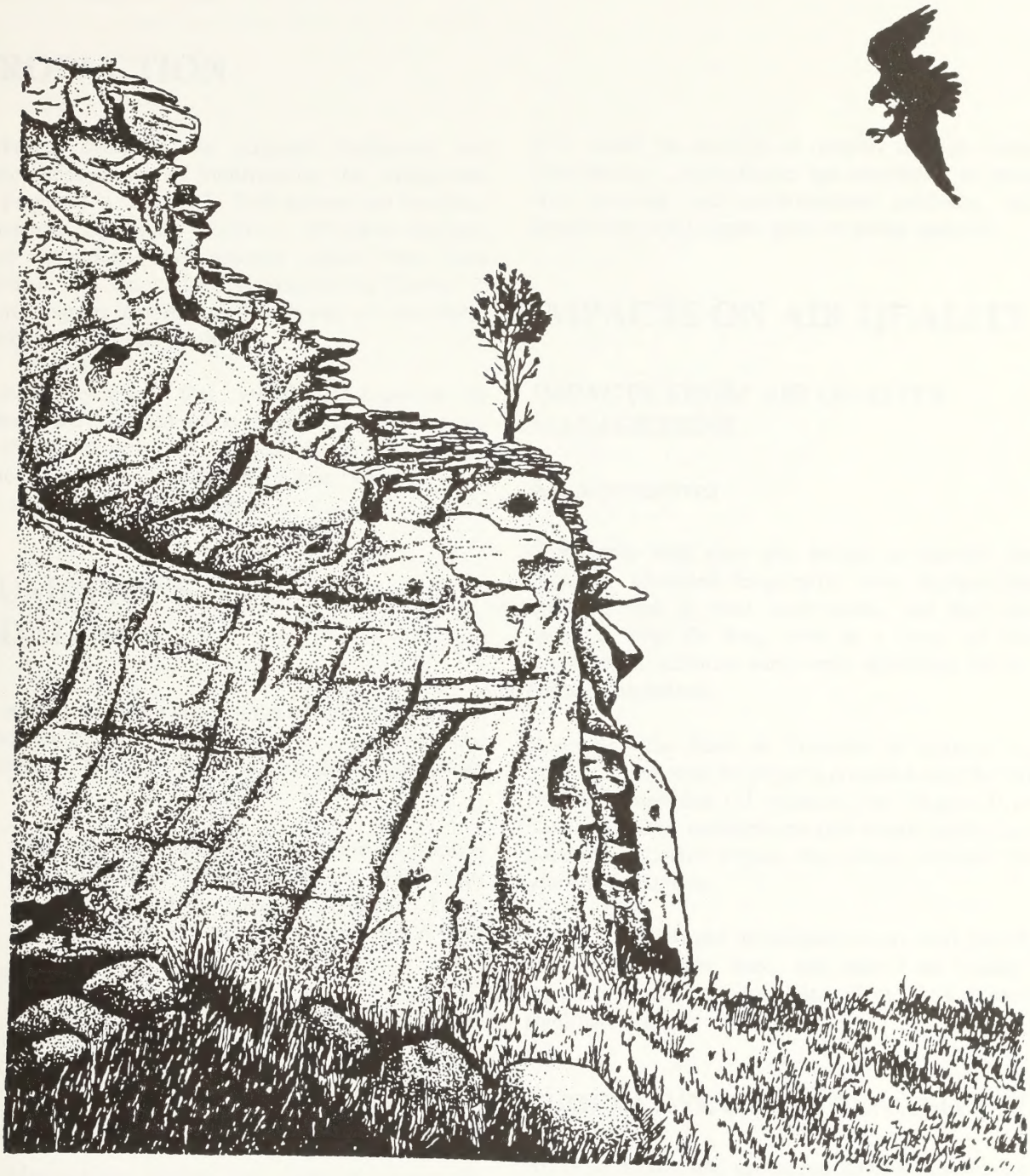
MAP 3–6. SAGE GROUSE SEASONAL RANGES




Overall Range
Production Area
Winter Range
Brood Range
MEEKER
RIO BLANCO
R 94 W
R 91 W
R 90 W
R 89 W
13
N
MILES
0
6
12
18
24
SCALE 1:500,000

MAP 3-6

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES



CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter describes the physical, biological, and economic consequences of implementing the management actions proposed in Chapter 2. Both adverse and beneficial environmental impacts are described. Mitigation designed to avoid or reduce environmental impacts have been incorporated into the various alternatives in Chapter 2. Therefore, impacts identified in this chapter are considered the unavoidable residual impacts.

Only those resources that would be impacted by management are discussed in this chapter. Those that would not be affected or would be affected only minimally were eliminated from further discussion. Those resources are climate, topography, and geology.

ASSUMPTIONS AND GUIDELINES

Certain assumptions were made by the interdisciplinary team in developing and analyzing the environmental consequences. The most important of these assumptions are:

1. Changes or impacts described are short-term unless otherwise stated. Short-term impacts would occur within the life of the plan (10-20 years). Long-term impacts would occur in excess of a 20-year period.

2. Significant changes or impacts are analyzed. In some cases, less than significant impacts are described in order to better define the scope of a management action or to differentiate between significant and nonsignificant impacts.

3. Management actions are analyzed under the assumption that adequate funding would be available to fully implement the action.

The effect from unforeseen actions not addressed in this plan would be analyzed as needed through future plan amendments. Amendments are completed in accordance with planning and environmental guidance, including appropriate public input, prior to action approval.

IMPACTS ON AIR QUALITY

IMPACTS FROM AIR QUALITY MANAGEMENT

All Alternatives

Compliance with state and federal air quality standards could be exceeded temporarily from surface-disturbing activities such as road construction, and they could be exceeded over the long term as a result of industrial development activities which emit significant levels of air pollutant emissions.

Requesting the State of Colorado to analyze visibility impairment impacts for projects proposed near the Dinosaur National Monument (13 locations, see Chapter 2) prior to the State issuing emissions permits would ensure that BLM does not authorize projects that would decrease visibility near the Monument.

All BLM actions and use authorizations must comply with all applicable local, state, and federal air quality laws, regulations and implementation plans. As a result, no significant impacts would occur.

CUMULATIVE IMPACTS ON AIR QUALITY

All BLM actions and use authorizations must comply with all applicable local, state, and federal air quality laws, regulations, and implementation plans. As a result, no significant impacts would occur.

IMPACTS ON SOILS

IMPACTS FROM SOILS MANAGEMENT

All Alternatives

The types of impacts that would occur from applying soil-proposed surface stipulations (see Soils Section, Chap 2 and Appendix B) would be the same under all alternatives. The degree of benefit derived from the soils stipulations would depend upon the number of acres subject to the stipulations under each alternative. Some of the soils-related stipulations overlap stipulations developed for other resources. Therefore, it is difficult to determine the amount of protection provided solely by the soil-related stipulations.

No surface occupancy (NSO) stipulations for soils would eliminate the potential for property and soil loss caused by surface-disturbing activities such as mineral development and timber harvesting. The amount of soil saved (tons per year) cannot be quantified. Controlled surface use (CSU) stipulations for soils, which place constraints on development on steep slopes, fragile soils, and saline soils, would reduce the potential for property loss and decrease the severity of soil loss that could occur from surface-disturbing activities. The amount of reduced soil loss cannot be quantified.

The types of beneficial impacts of developing and implementing watershed plans separately or as part of integrated activity plans would be the same under all alternatives. The amount of benefit would depend on the number of watershed plans developed and implemented under each alternative. Under Alternatives A and B, only seven watershed plans (80,910 acres) would be developed and implemented. Under Alternatives C and D, 15 watershed plans (508,650 acres) would be developed and implemented.

Watershed projects proposed in watershed plans would improve vegetation cover and soil infiltration, which would help minimize soil erosion. Watershed plans developed and implemented through integrated activity plans would encourage ecosystem management.

Restricting activities (e.g., motorized vehicle travel, fire suppression and surface disturbance) as proposed in Appendix B within fragile and saline soils would protect the soil's physical properties and protective herbaceous cover. Leaving shallow topsoil in place would protect sparse vegetation and prevent the displacement of salinity and sediment, inhibiting the erosion process. Because disturbed areas would be on the more productive soil sites, the reclamation process would be shorter term. Some fragile soil areas would be unavoidable (e.g., existing leases and prior disturbance) and, as a result, increases in sediment and salinity loads could be expected. Although these increases cannot be calculated, is it believed that they would be adverse and long term, based on past soil erosion and mass wasting that has occurred from surface-disturbing activities.

Alternative A

Continuing to prohibit surface occupancy on 7,200 acres of landslide areas in the Baxter/Douglas Pass area would reduce the potential for property loss and decrease the severity of soil loss, as would avoiding erosive, saline soils, and steep slopes on 16,490 acres identified in the Piceance Basin RMP as soil management priority areas (MPAs) within the Piceance Basin.

Not applying the CSU stipulation on 52,000 acres of saline soils, as proposed under Alternatives C and D, would continue to contribute 8-20 tons per acre per year of salt to the Upper Colorado River Basin. Mancos shale terrain is highly erodible, producing large quantities of salt and sediment. Jackson et al, estimated the ratio of salt to sediment produced in these small drainage basins to be 3.8 percent. The U. S. Soil Conservation Service (SCS) determined these same areas have the potential to transport 2-5 tons per acre per year of sediment from water erosion.

Until recently, intensive management of watersheds has been confined to 80,910 acres of high saline watersheds in the Wolf Creek and Lower Missouri Creek drainage. Continuing to implement only seven watershed plans under Alternative A would reduce erosion rates only in those watersheds. These watersheds may or may not be the priority of other resources, causing a nonintegrated effort.

Alternative B

Opening the NSO areas on Baxter/Douglas Pass (7,200 acres) under Alternative B could be the most damaging to soils resources. Soil loss would increase in this area from an existing 1 ton per acre per year to 8 tons per acre per year (800 percent increase) due to surface disturbance. These soil erosion rates are most likely underestimated for potential erosion increase because they do not take into account the massive types of erosion activity, such as landslides, gulling, and soil piping that normally takes place on fragile soils. Not applying the soils CSU stipulation

(16,490 acres) on soils in MPAs could potentially increase soil erosion rates in these areas.

Not applying the CSU stipulation on 52,000 acres of saline soils could contribute 8-20 tons per acre per year of salt in the Upper Colorado River Basin. Mancos shale terrain is highly erodible, producing large quantities of salt and sediment. Jackson et al, estimated the ratio of salt to sediment produced in these small drainage basins to be 3.8 percent. The SCS determined these same areas have the potential to transport 2-5 tons per acre per year of sediment from water erosion.

Implementing limited watershed management practices would have moderately favorable effects on soil resources. Priority would shift to areas where there is the highest amount of disturbance, which may or may not be the priority of other resources, causing a nonintegrated effort.

Alternative C

Continuing to apply the soil-related NSO stipulation on Baxter/Douglas Pass and adding other landslide areas as NSO (a total of 8,900 acres) would continue to reduce the potential for soil loss in that area. A typical undisturbed side slope in the Baxter/Douglas Pass area losses approximately 1 ton per acre per year from natural erosion alone. (The CSU stipulation (16,490 acres) on soils in MPAs would be continued. It is a part of the 791,300 acres NSO.)

Placing fragile soils under an NSO stipulation (791,300 acres) would have both adverse and beneficial impacts on soil resources. This degree of impact could vary, relative to future conditions of the watershed and the size of the actual area that is NSO. Limitations on surface-disturbing activities would be most intense and widespread under this alternative. Generally, soil resources would be the least adversely affected by management actions under this alternative, and in some areas soils conditions would improve. On the other hand, limiting surface-disturbing activities could also restrict watershed treatments (e.g., gully plugs, check dams, and pits) within fragile soil areas and could potentially increase sediment erosion and stream deposition in areas with already-accelerated erosion. Applying best management practices (BMPs) would help minimize impacts.

Applying a 52,000-acre CSU stipulation on highly saline soils and using the best management practices (BMPs) listed in Appendix A as well as other BMPs, would help retain 8-20 tons per acre per year of salt.

Alterative D

Continuing to apply the soil-related NSO stipulation on Baxter/Douglas Pass would continue to reduce soil loss in that area. A typical undisturbed side slope in the Baxter/Douglas Pass area losses approximately 1 ton per acre per year from natural erosion alone. (The soils stipulation (16,490 acres) on soils in MPAs would be continued. It is a part of 484,000 acres of fragile soils.)

Applying a 52,000-acre CSU stipulation on highly saline soils and using the BMPs listed in Appendix A, as well as other BMPs, would help retain 8-20 tons per acre per year of salt.

Applying a CSU stipulation to 484,000 acres of fragile soils on slopes greater than 35 percent would help to minimize greater potential for erosion and mass wasting. Slopes greater than 35 percent (e.g., three and one-half rise in ten feet of run) are considered critical in terms of increased erosion and potential for soil instability for construction purposes.

IMPACTS FROM OIL AND GAS, MINERAL MATERIALS, OIL SHALE, SODIUM, COAL, TIMBER HARVESTING, AND LAND USE AUTHORIZATIONS MANAGEMENT

All Alternatives

Surface-disturbing activities such as oil and gas, mineral materials, oil shale, coal development, timber harvesting, and land use authorizations would all result in the same types of soil-related impacts. Surface stipulations listed in Appendix B would help reduce soil impacts by either prohibiting surface-disturbing activities or avoiding sensitive areas. Soil loss caused by surface-disturbing activities would be eliminated in no lease areas and in NSO stipulation areas. Timing limitation (TL) stipulations imposed by wildlife would help reduce soil impacts that occur from surface-disturbing activities conducted in wet and moist areas as no disturbance would be allowed during the TL stipulation. CSU stipulations imposed by soils and by other resources could protect soils to a lesser extent.

The severity of soils impacts would depend on the number of acres unavailable for leasing and surface occupancy and the number of acres protected by TL and CSU stipulations.

Table 4-1 (Cumulative Impacts on Soils Section) lists the number of acres that would not be available for surface-disturbing activities. It also lists the acres that would be available to surface-disturbing activities but conditioned by other stipulations.

Soils not protected by these surface stipulations would be subject to soil impacts caused by surface-disturbing activities. Fragile soils in these disturbed areas would be the most vulnerable to soil loss. However, some loss would still occur from natural processes. The amount of soil loss cannot be quantified. Soil erosion in areas with high salt content would contribute to salinity in the Upper Colorado River Basin. Any increase in salinity in the Colorado River Basin is of national concern.

Development and associated road construction would displace topsoil, adversely affecting the structure and microbial activity of the soil and resulting in a reduction of natural productivity. Development and associated roads could result in soil loss through excessive erosion and slope failures and damage soil properties in place by compaction or chemical contamination. Short-term soil loss would occur during the construction phase and for a period after construction. Many of these short-term erosion problems would be reduced by surface reclamation procedures (Appendix A). Revegetating disturbed areas would initiate the process of creating new soil structures and soil horizons. On fragile soil sites, the process would be very slow due to an already-low productive soil usually high in salinity and low rainfall. Fragile (e.g., especially soils high in gypsum) and saline soils are extremely susceptible to soil loss caused by development. These soils occur on 830,100 acres (46 percent of the resource area total). Many of the short-term impacts also would be reduced by the use of mitigation under Section 6 of standard lease terms for oil and gas leasing and development.

A number of erosion and productivity problems (e.g., fragile and saline soils) may not be eliminated under current management actions, resulting in a long-term declining trend in soil resources. Long-term impacts to soil productivity and stability would occur as a result of open pit mining and surface disposal of retorted shale, until successful reclamation is accomplished. These problems would be minimized if the spent shale were covered with at least 24 inches of suitable plant growth material.

Reduction in soil fertility levels and reduced productivity would affect diversity of reestablished vegetative communities. Surface spillage of nahcolite and other minerals would result in dispersion of soil particles and subsequent breakdown of soil structure. Moisture infiltration would be reduced, creating soil drought conditions. Vegetation would undergo physiological drought reactions.

Harvesting timberlands and woodlands would have both beneficial and damaging impacts on forest soils. Although cut areas could encourage the development of a grass understory which aids in soil stabilization, an unquantifiable amount of soil would be lost due to trails, road construction and camps. This loss of soil productivity would occur through damaging soil properties in place by compaction. When compaction occurs, reduced infiltration capacity could persist for over 50 years in some soils (Power 1974 cited by Fredriksen and Harr 1979).

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

All Alternatives

Vegetation treatments could affect the physical characteristics of soils, alter the abundance and types of vegetation that may shield soils from erosion, or alter soil quality. Many of these short-term erosion problems would be reduced by surface reclamation procedures.

Reducing the amount of rangelands managed in a early- to mid-seral (e.g., rangelands with sparse cover) community would generally produce higher sediment yields than rangelands in a high- to climax-seral stage because of differences in soil infiltration rates (Rauzi 1960). Consequently, rangelands in a early- or mid-seral stage would have net surface soil losses over the long term, resulting in a declining trend in soil productivity.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Continuing to improve streambanks and land in high priority riparian areas would reduce sediment and salinity but would neglect 170,610 acres identified as fragile watersheds. Fencing and moderate grazing within Soldier/Lake Creeks and Roan Plateau would enhance soil and streambank stability, thereby reducing erosion in affected watersheds.

Alternative B

Protecting vegetative cover within riparian areas would be beneficial to soil resources. Conversely, incompatible land use in riparian areas would impair the channel's natural ability to retain water, stabilize banks and collect sediment. Application of BMPs (e.g., buffer establishment between road and channel) would help minimize these effects.

Alternatives C and D

Improving management on high- and medium-priority riparian areas and requiring incompatible land uses to avoid priority riparian areas would be beneficial to soil resources. Expanding the level of management and protection (e.g., avoidance of priority areas) to medium-priority streams would extend soil benefits to an increased number of watersheds. More stringent application of BMPs (e.g., buffer establishment between road and channel) would help minimize adverse effects.

IMPACTS FROM LIVESTOCK GRAZING, WILD HORSE, AND BIG GAME MANAGEMENT

All Alternatives

Continuing to implement livestock or wildlife projects that increase vegetative cover and better distribute animals would provide long-term improvement and protection of soil resources. Big game land use restrictions (e.g., protection of critical winter range, elk and pronghorn production areas, Moosehead road closure) would help protect soils resources by preventing surface disturbances.

Improved forage production and vegetative cover would improve soil infiltration rates, causing sediment yields from rangelands to improve somewhat over the long term. Soil compaction problems associated with use of riparian areas would be lessened with implementation of BMPs and alternative water sources.

Under all alternatives, continuing to allow or provide big game and wild horses to use more forage than was allotted to them in the 1981 *Grazing Management Environmental Impact Statement* (EIS) while not reducing livestock allocations could result in overgrazing and animal-unit months (AUM) deficits in the Douglas/Cathedral and Wolf Creek/Red Wash Geographic Reference Areas (GRAs). These impacts would vary by alternative as discussed in Chapter 2, Plant Communities Section.

AUM deficits could deplete the vegetative cover needed to protect soil from erosion and could cause long term soil productivity problems. Overgrazing in any watershed would cause soil compaction, reduce infiltration, and decrease watershed stability. Sensitive (e.g., fragile soils) watersheds have very high erosion potential and are frequently high in salts. Proper grazing practices (e.g., rest rotation, time of use) within sensitive watersheds is consequential in reducing erosion from both streambank and upland sources.

IMPACTS FROM GROUSE MANAGEMENT

All Alternatives

Continuing to designate NSO areas within 10- to 40-acre parcels around identified sage grouse leks would provide concurrent protection of soils from surface disturbance on approximately 1,100 acres.

IMPACTS FROM FISHERIES MANAGEMENT

All Alternatives

Implementing projects (e.g., livestock exclosures) for the improvement of fisheries would enhance streambank stability, vegetative cover thereby reducing soil erosion. Prohibiting surface disturbance within 300 feet of active beaver colonies (Alternative A) would also contribute to streambank and soil stabilization.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

All Alternatives

Continuing to protect prairie dog habitat for potential black-footed ferret reintroduction (Wolf Creek and Coyote Basin) could limit sagebrush manipulations and project developments planned in several watersheds. This would reduce the effectiveness of watershed improvements. Implementing management objectives for special status wildlife, which restrict surface-disturbing activities within floodplains and riparian habitats, would be beneficial to soil

resources by reducing compaction and erosion and increasing infiltration.

Not designating the East Douglas watershed as an areas of critical environmental concern (ACEC), as proposed under Alternative A, would leave steep slopes on 55 percent of East Douglas Creek watershed and its tributaries open to development without a CSU stipulation. These fragile soils would be partially protected under Alternative B by the proposed Soldier Creek ACEC and CSU stipulation (Soldier Creek is within Douglas Creek watershed). The soils would be protected by the Douglas Creek/Cathedral Creek ACEC under Alternatives C and D.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Permanently protecting 41,250 acres of wilderness study area (WSA) as wilderness and providing interim protection on 40,090 acres of non-recommended WSAs would have both adverse and beneficial impacts on soil management. Prohibiting surface-disturbing activities that could cause accelerated soil erosion would be benefiting. However, if the soil or watershed condition deteriorated over time, corrective procedures would be limited because of restrictions placed on the types of watershed rehabilitation treatments allowed.

Returning Black Mountain, Windy Gulch, and Oil Spring Mountain to multiple use management, following interim protection, would allow surface-disturbing activities to take place. Short-term losses would occur from any type of surface-disturbing activity, but many of these short-term erosion problems would be mitigated by surface reclamation procedures.

IMPACTS FROM VISUAL RESOURCES MANAGEMENT

All Alternatives

Prohibiting surface-disturbing activities in VRM Class I areas and restricting surface-disturbing activities in Class II areas would help reduce soils-related impacts in these areas. Allowing more liberal development in Class III and Class IV areas would increase the opportunity for soils-related impacts caused by surface-disturbing activities. Surface disturbance could increase sediment and salinity yields fragile /saline soil areas by an unquantifiable amount. The amount of protection or lack thereof would vary by alternative:

Alternatives A and B

Current VRM classifications would permit additional development on 1,818,900 acres of VRM Class III and VRM Class IV areas.

Alternatives C and D

Proposed VRM classifications would permit additional development on 985,270 acres of VRM Class III and Class IV lands under Alternative C (a reduction of 833,630 acres from Alternatives A and B) and 1,007,780 acres under Alternative D (a reduction of 811,120 acres from Alternative A). These reductions would significantly decrease sediment and salinity yields.

IMPACTS FROM AREAS OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT

All Alternatives

NSO stipulations in existing and proposed areas of critical environmental concern (ACECs) on 4,440 acres, 4,600 acres, and 26,770 acres under Alternatives A, B, and C/D, respectively, would help eliminate surface disturbance on this acreage and eliminate soil loss created by surface-disturbing activities. CSU stipulations in existing and proposed ACECs on 7,440 acres, 8,630 acres, and 99,060 acres under Alternatives A, B, and C/D, respectively, would help reduce soil erosion by controlling surface disturbances.

IMPACTS FROM RECREATION AND MOTORIZED VEHICLE TRAVEL MANAGEMENT

All Alternatives

Recreation impacts on soils would depend upon the types and numbers of facilities and other management (e.g., targeted activities, desired settings, etc.) (see Chapter 2, Recreation Section) provided within special recreation

management areas (SRMAs) and the types of recreation activities allowed outside the SRMA. Impacts also would depend upon the types of stipulations in place to protect soils from burnoff, types of motorized travel allowed, and soil conditions. Vehicle use of unimproved roads during wet or moist conditions is a major cause of accelerated road deterioration and gully erosion. Off-road vehicle use destroys soil-stabilizing vegetation, damages soil properties in place by compaction, and reduces soil-water infiltration.

Localized adverse and beneficial impacts could result from the proposed wilderness designation for Bull Canyon, Willow Creek, and Skull Creek WSAs. Increases in sediment yield from surface erosion of compacted trails and parking areas would occur from construction and visitor use, degrading local surface water quality. Primitive area designation would be beneficial to soil resources by limiting off-road vehicle use and reducing surface disturbance.

Alternative A

Soil losses would occur from vehicles driving off existing roads and trails, road/facility construction and visitor use. A loss of productivity would occur by damaging soil properties in place by compaction, thus reducing soil-water infiltration. Enforcing the NSO stipulations in the soil MPAs (16,490 acres) and the Baxter/Douglas landslide areas (7,200 acres) would prevent the construction of developed recreation sites in these areas. The White River Extensive Recreation Management Area (ERMA) contains an additional 806,400 acres (44 percent resource area total) of fragile and/or saline soils. These soils would not be subject to soils stipulations and, as a result, an unquantifiable amount of soil could be lost by uncontrolled, unconfined recreation, especially off-road motorized vehicle travel.

Continuing vehicle use on unimproved roads during wet or moist conditions would continue to cause accelerated road deterioration and soil loss. Continuing off-road vehicle use would continue to destroy soil-stabilizing vegetation, damage soil properties in place by compaction, and reduce soil-water infiltration. An undetermined amount of soil would be disturbed in fragile, highly erosive or saline soil areas from an increase in roads and trails.

Restricting motorized vehicles to existing roads and trails in designated ACECs (8,740 acres) and soil MPAs in Piceance Basin (16,490 acres), would have positive benefits to soil resources.

Alternative B

Removing the NSO stipulation on Baxter/Douglas Pass areas and soil MPAs would allow 830,100 acres of fragile/saline soils in the White River ERMA to be open to unconfined, dispersed recreational use. Off-road vehicle travel to a campsite would be most damaging in terms of increased runoff and sedimentation.

Restricting motorized vehicle travel to existing roads and trails would reduce, by an undetermined amount, soil damage that is presently occurring from unrestricted off-road vehicle travel throughout most of the resource area. Trying to maintain road density in critical wildlife habitat to 1.5 miles per square mile and 3 miles per square mile elsewhere in the resource area would reduce the amount of damage that is presently occurring from road travel. Closing roads based on this criteria would be beneficial to soils resource.

Alternatives C and D

Restricting motorized vehicle travel to designated roads and trails would reduce, by an undetermined amount, soil damage that is presently occurring from unrestricted off-road vehicle travel throughout most of the resource area. Trying to maintain road density in critical wildlife habitat to 1.5 miles per square mile and 3 miles per square mile elsewhere in the resource area would reduce the amount of damage that is presently occurring from road travel.

Designating Coal Oil Basin open for motorized vehicle travel with little restrictions would expose 86,843 acres of fragile soils to disturbance. Off-road vehicle use would destroy soil-stabilizing vegetation, damage soil properties in place by compaction, and reduce soil-water infiltration. Increases in overland erosion would be expected because of the difficulty in maintaining and reestablishing vegetation in these areas.

IMPACTS FROM FIRE MANAGEMENT

Alternatives A and B

Fireline construction and vegetation removal would cause short-term disturbance to soil resources, including fragile/saline soils. Soil loss would occur through excessive wind and water erosion on burned slopes and road surfaces. Loss of productivity would occur by physical removal, mixing, redistributing, and/or burying of surface soils, and

would damage soil properties in place by compaction, reducing soil water infiltration and microbial activity of the soil. Fragile and saline soils are extremely susceptible to these impacts and make up 830,100 acres in the resource area.

Alternative C

Impacts from fire management would be the same as described under Alternative A. Management restrictions and BMPs in Appendix A would help minimize erosion on 830,100 acres of fragile and saline soils.

Alternative D

Impacts from fire management would be the same as described under Alternative A except for the applications of management restrictions and BMPs, which would help minimize erosion on 830,100 acres of fragile and saline soils. With the soil CSU, 424,000 acres would be subject to management restrictions on fragile soils with slopes greater than 35 percent and restrictions on 52,000 acres of highly saline soils.

CUMULATIVE IMPACTS ON SOIL RESOURCES

All Alternatives

An unquantifiable amount of soil would be lost from surface-disturbing activities through wind and water erosion in the short term until vegetative cover is established. These losses could continue over the long term if disturbance is in fragile soils because of the difficulty in establishing vegetation on these sites. Soils losses would be significant in the short term but not in the long term. A number of long-term erosion and productivity problems (e.g., fragile and saline soils) may not be restored by reclamation, resulting in a declining trend for soil resources.

Revegetating disturbed areas would begin the process of creating new soil structures and soil horizons. The process on fragile soil sites would be very slow because of the already-low productive soil usually high in salinity and low in rainfall.

Constructing roads, trails, and well pads within sensitive watersheds would have the most adverse impact on soils within or adjacent to fragile soil areas. High rates of soil erosion from disturbance of fragile sites would cause increased sedimentation and increased salinity loads to the Colorado River Basin.

Prohibiting surface disturbance in no lease areas and NSO areas would prevent soil and surface water impacts caused by surface-disturbing activities. Conditioning development with TL and CSU stipulations (especially soils CSU stipulations) would help reduce impacts on soils. The amount of protection is shown in Table 4-1.

Table 4-1. Acres of BLM Land Subject to No Lease and Surface Stipulations

Restriction	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Unavailable for Surface-Disturbing Activities				
No Leasing	42,780	42,780	58,350	42,780
Subject to NSO stipulations (includes those Imposed by soils)	19,750	276,040	1,125,720	148,450
Open to Surface Disturbing Activities But Subject to Surface Stipulations[3/]				
Subject TL stipulation	591,860	331,850	1,631,040	959,000
Subject to CSU stipulation (includes those imposed by soils)	831,380	1,050,120	1,528,230	1,228,280

N/A = Lease restrictions do not apply under this alternative.
Note: Columns cannot be totaled because many stipulations overlap one another.

Alternative A

Adverse effects would occur from any type of surface-disturbing activity in the short term until surface reclamation procedures were successful. However, a number of long-term erosion and productivity problems (e.g., fragile and saline soils) may not be mitigated under this alternative, resulting in a declining trend for soil resources.

Prohibiting surface disturbance in no lease areas and NSO areas would prevent soil impacts caused by surface-disturbing activities. Conditioning development with TL and CSU stipulations (especially soils CSU stipulations) would also help to reduce impacts on soils.

Soil loss in the Baxter/Douglas Pass area would continue from natural process at the rate of 1 ton per acre per year. Continuing to allow motorized vehicles to drive both on and off roads throughout the resource area would have positive benefits to soils.

Alternative B

Opening the NSO areas on Baxter/Douglas Passes could be the most damaging to soils resources. Soil erosion in this area would increase 800 percent (from 1 ton per acre per year to 8 tons per acre per year). Restricting motorized vehicles to existing roads and trails would reduce damage to soils. Off-road vehicle travel destroys soil-stabilizing vegetation, damages soil properties in place by compaction, and reduces soil-water infiltration.

Alternative C

Soil loss in the Baxter/Douglas Pass area would continue from natural process at the rate of 1 ton per acre per year. Placing fragile soils under an NSO stipulation could reduce soil loss in these areas and improve watershed conditions but would also restrict watershed treatments (e.g., gully plugs, check dams and pits) and within fragile soil areas and could potentially increase sediment erosion stream deposition in areas with already-accelerated erosion. The degree of impact could vary relative to future conditions of the watershed and the size of the actual area that is NSO. Applying BMPs would help minimize impacts.

Designating Coal Oil Basin open for off-road vehicle travel with little restrictions would expose 86,843 acres of fragile soils to disturbance. Increases in overland erosion would be expected because of the difficulty in reestablishing vegetation in these areas.

Alternative D

Soil loss in the Baxter/Douglas Pass area would continue from natural process at the rate of 1 ton per acre per year. Studies have documented that Mancos shale terrain is highly erodible, producing large quantities of salt and sediment. Jackson et al, estimated the ratio of salt to sediment produced in these small drainage basins to be 3.8 percent. The SCS determined these same areas have the potential to transport 2-5 tons per acre per year of sediment from water erosion. By applying a 52,000-acre CSU stipulation on highly saline soils and using the BMPs listed in Appendix A, as well as other BMPs, 8-20 tons per acre per year of salt could potentially be retained.

Slope angle is a critical factor in project and road location. As slope angle increases, the potential for erosion and mass wasting increases. Slopes greater than 35 percent (e.g., three and one-half rise in ten feet of run) are considered critical in terms of increased erosion and potential for soil instability for construction purposes. Applying a CSU stipulation to 484,000 acres of fragile soils on slopes greater than 35 percent would help to minimize these problems.

Soils CSU stipulations attached to all surface-disturbing activities would require special construction techniques be used in an effort to minimize soil erosion. BMPs listed in Appendix A, as well as other BMPs would also be used to help reduce sedimentation and salinity transport.

Restricting vehicles to designated trails and reducing effective road density to 1.5 miles per square mile would be beneficial to soils management. Vehicle use of unimproved roads during wet of moist conditions is a major cause of accelerated road deterioration and soil loss. Off-road vehicle travel destroys soil-stabilizing vegetation, damages soil properties in place by compaction, and reduces soil water infiltration.

Designating Coal Oil Basin open for off-road vehicle travel with little restrictions would expose 86,843 acres of fragile soils to disturbance. Increases in overland erosion would be expected because of the difficulty in reestablishing vegetation in these areas.

IMPACTS ON SURFACE WATER MANAGEMENT

IMPACTS FROM SURFACE WATER AND SOILS MANAGEMENT

All Alternatives

Applying soils-related stipulations to surface-disturbing activities and developing watershed management plans would decrease soil erosion as described in Chapter 4 (see Impacts on Soils from Soils and Surface Water Management) and thereby reduce sediment and salinity.

IMPACTS FROM OIL AND GAS, MINERAL MATERIALS, OIL SHALE, SODIUM, COAL, AND LAND USE AUTHORIZATIONS MANAGEMENT

All Alternatives

Surface-disturbing activities such as oil and gas, mineral materials, oil shale, coal development, timber harvesting, and land use authorizations would all increase soil erosion and thereby increase sediment and salinity in nearby drainages. No lease areas would prohibit surface-disturbing activities as would NSO stipulations. TL stipulations imposed by wildlife would help reduce soils impacts that occur from surface-disturbing activities conducted in wet and moist areas, as no disturbance would be allowed during the TL stipulation. CSU stipulations imposed by soils would reduce surface water impacts. CSU stipulations imposed by other resources could protect surface water to a lesser extent.

The severity of soils and surface water impacts would depend on the number of acres unavailable for leasing and surface occupancy and the number of acres protected by TL and CSU stipulations. Table 4-1 (Soils Section) lists the number of acres that would NOT be available to surface-disturbing activities. It also lists the acres that would be available to surface-disturbing activities but conditioned by other stipulations.

Revegetating disturbed areas would help minimize raindrop impact, thereby improving soil-water infiltration and water retention and reducing the potential for overland flows. These types of degradation contribute to gullying, stream bank erosion, and reduced water quality. Many of these short-term erosion problems would be avoided by surface reclamation procedures and with the use of BMPs. However, a number of accelerated erosion and salinity problems (e.g., fragile and saline soils) would not be avoided, resulting in a declining trend in water quality and stream bank stabilization. This trend would continue for the long term because of the difficulty in revegetating fragile watersheds.

Oil and gas development would result in the following impacts on water quality and quantity:

- Reduced water quality due to erosion of salt and sediment off roads, drill pads, and pipeline rights-of-ways.
- Contamination from produced water which may contain high concentrations of salts (particularly sodium and chloride), heavy metals, and aromatic hydrocarbons, such as benzene and toluene. Spills, leakage or percolation from pits could contaminate surface waters.
- Disappearance and/or reduction in flows on normally perennial seeps and springs could occur due to compaction or loss of vegetation, which reduces soil-water infiltration.
- Mudflows from landslides and gullying associated with roads and drill pads could deposit large amounts of sediment into drainages. Typically, these mass waste events occur during moist spring conditions.
- Mass gullying, piping and rill erosion could occur where well pads and roads have been developed in fragile or highly saline soils.

Oil shale development would have the following impacts on surface water:

- Up to an 8.2 percent reduction in the annual flow of the White River at the confluence with the Green River. Portions or all of the water used in oil shale development could be irreversibly lost to agriculture over the short term. Reduction in flow to the White River would be considered insignificant to the overall discharge. However, lower flows would concentrate total dissolved solids (salinity), which would increase salinity

contribution to the Colorado River Basin. Any increases to salinity in the Colorado River Basin are considered significant with respect to agriculture, public health, recreation uses, fisheries, and economics.

- Possible in-situ leachates containing high levels of many inorganic and organic constituents and carried by ground water into Piceance and Yellow Creeks, causing the quality of these streams to deteriorate.

- Leaching of surface spent shale spoil piles into the ground water system could degrade surface water quality.

Sodium development would have the following effects on surface water, although much would depend on the method of development used:

- Surface disturbances on approximately 1,000 acres would increase sediment delivered to the streams during project construction and operation.

- Reduced soil fertility levels and productivity by mixing of the soil horizons would affect diversity of reestablished vegetative communities and their potential to protect soils from surface runoff.

- Degradation of surface water quality from brine spills during pipeline disconnection and movement, accidental pipeline ruptures, and evaporation pond leaks or overflow.

Coal development would have the following impacts on surface water:

- Alteration or removal of existing stream channels from surface disturbances and subsidence from underground mining.

- Reduced flows. Peak flows would be lower and occur earlier than pre-mining flows. Base flows would be lower during and shortly after mining but would be higher over the long term after reclamation.

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

All Alternatives

Vegetation treatments could affect the physical characteristics of soils and alter the abundance and types of vegetation that shield soil from water erosion. Treatments aimed at reducing woody species and increasing herbaceous species greatly reduce runoff and erosion and improve soil stability. Loss of vegetation cover may result in increased erosion and a temporary increase in sedimentation from high intensity summer storms; however, erosion from snow melt and gentle rainfall would be limited. Recovery of infiltration rates and sediment control generally occur with time and interim losses depend on the speed of revegetation.

IMPACTS FROM RIPARIAN MANAGEMENT

All Alternatives

Implementing management on high- and medium-priority riparian areas and implementing grazing and vegetation management objectives listed in Chapter 2 would be beneficial to surface water management. Incompatible land-use activities that involve riparian areas and impair the channel's natural ability to retain water would be mitigated by projects to stabilize banks and collect sediment. Excessive grazing and associated trampling of stream riparian areas adversely affects water quality and flow duration by removing or deteriorating streambank vegetation necessary for sediment capture and bank stability.

Applying BMPs (e.g., buffer establishment between road and channel) listed in Appendix A and surface stipulations listed in Appendix B would help minimize adverse effects.

IMPACTS FROM TIMBER MANAGEMENT

All Alternatives

Harvesting Douglas-fir and spruce/fir would reduce short-term evapotranspiration rates and increase runoff. These

activities could affect water yields, seasonal streamflow characteristics, and instream water quality. The significance of the impacts would depend on the proposed annual harvest levels (Alternative A - 190 acres; Alternative B - 1,450 acres; Alternatives C and D - 4 acres) location of timber harvesting, (e.g. soil type or proximity of activities to streams), and site-specific application of mitigation. It also would depend upon the number of acres subject to leasing, NSO stipulations, and CSU stipulations (see Table 4-1) under each alternative.

IMPACTS FROM WOODLANDS MANAGEMENT

All Alternatives

Harvesting commercial woodlands would reduce short-term evapotranspiration rates and increase runoff. In watersheds with large clearcut acreage, timing and magnitude of seasonal streamflows may be altered (e.g., larger peak flows or sustained flows). Increased water yields may also contribute to accelerated overland and channel erosion, especially on soils considered fragile. Although cut areas would encourage the development of a grass understory, which aids in soil stabilization, an unquantifiable amount of sediment would be lost due to trails or road construction. The severity of these impacts would vary by alternative depending upon the proposed annual allowable harvest: Alternative A - 890 acres; Alternative B - 240 acres; Alternatives C and D - 45 acres. BMPs would be implemented to new commercial permits to help mitigate any impacts to surface water resources.

IMPACTS FROM LIVESTOCK GRAZING, WILD HORSE, AND BIG GAME MANAGEMENT

All Alternatives

Under all alternatives, continuing to allow or provide big game and wild horses to use more forage than was allotted to them in the 1981 *Grazing Management Environmental Impact Statement* while not reducing livestock allocations could result in overgrazing and AUM deficits in the Douglas/Cathedral and Wolf Ridge/Red Wash GRAs. These deficits would vary by alternative as discussed in Chapter 2, Plant Communities Section.

AUM deficits could deplete the vegetative cover needed to protect watersheds from runoff and erosion and could cause long-term watershed problems. Sensitive (e.g., fragile soils) watersheds have very high erosion potential and are frequently high in salts. Proper grazing practices (e.g., rest rotation, time of use) within sensitive watersheds is consequential in reducing erosion and sedimentation from both streambank and upland sources.

Developing AMPs on 35 allotments in the improve category would help reduce the impacts associated with livestock grazing by controlling livestock use and improving rangeland conditions. As with any surface-disturbing activity, implementation of range improvement projects would increase soil erosion. An increase in soil erosion would degrade water quality for the short term, until successful reclamation is achieved.

Implementation of livestock and wildlife projects that increase vegetation cover and better distribute animals would help decrease overland flows and improve water quality. Long term streambank benefits would be realized from wildlife management actions.

Big game land-use restrictions (e.g., protection of critical winter range, elk and pronghorn production areas, Moosehead road closure) would help protect surface water management by preventing surface disturbances.

IMPACTS FROM GROUSE MANAGEMENT

All Alternatives

Continuing to designate NSO within 10- to 40-acre parcels around identified sage grouse leks would provide concurrent protection of soils from surface disturbance on approximately 1,100 acres.

IMPACTS FROM FISHERIES MANAGEMENT

All Alternatives

Implementing projects that improve fisheries habitat, increase bank stabilization, reduce erosion, and improve vegetative cover would have benefiting impacts on surface water quality. Prohibiting surface disturbance within 300 feet of active beaver colonies (Alternative A) would also contribute to streambank stabilization.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

All Alternatives

Protecting black-footed ferret reintroduction areas (Wolf Creek and Coyote Basin) would limit sagebrush manipulation and project development in several watershed plans.

Implementing management objectives for special status wildlife, which restrict surface-disturbing activities within floodplains and riparian habitats, would be beneficial to water resources.

IMPACTS FROM WILDERNESS MANAGEMENT

Alternative A

Permanently protecting 41,250 acres of WSA as wilderness and providing interim protection on 40,090 acres of non-recommended WSA would have both adverse and beneficial impacts on surface water management. Prohibiting surface-disturbing activities that could cause accelerated soil erosion would be benefiting. However, if the soil or watershed condition deteriorated over time, mitigative procedures would be limited because of restrictions placed on the types of watershed rehabilitation treatments allowed.

Returning Black Mountain, Windy Gulch, and Oil Spring Mountain to multiple use management, following interim protection, would allow surface-disturbing activities to take place. Short-term losses would occur from any type of surface-disturbing activity, but many of these short-term erosion problems would be mitigated by surface reclamation procedures.

Alternatives B, C and D

Impacts would be the same as described under Alternative A, except short-term erosion problems would be avoided by surface reclamation procedures and BMPs.

IMPACTS FROM VISUAL RESOURCES MANAGEMENT

All Alternatives

Prohibiting surface-disturbing activities in VRM Class I areas and restricting surface-disturbing activities in Class II areas would help reduce surface water-related impacts in these areas. Allowing more liberal development in Class III and Class IV areas increases the opportunity for surface water-related impacts caused by surface-disturbing activities. Surface disturbance could cause sediment and salinity yields to increase, in fragile /saline soil areas by an unquantifiable amount. The amount of protection or lack thereof would vary by alternative:

Alternatives A and B

Current VRM classifications would permit additional development on 1,818,900 acres of VRM Class III and VRM Class IV areas.

Alternatives C and D

Proposed VRM classifications would permit additional development on 985,270 acres of VRM Class III and IV land under Alternative C (a reduction of 833,630 acres from Alternatives A and B) and 1,007,780 acres under Alternative D (a reduction of 811,120 acres from Alternative A). These reductions would significantly decrease sediment and salinity yields.

IMPACTS FROM AREAS OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT

All Alternatives

NSO stipulations in existing and proposed ACECs on 4,440 acres, 4,600 acres, and 26,770 acres under Alternatives A, B, and C/D, respectively, would help eliminate surface disturbance on this acreage and eliminate sedimentation in nearby drainages created by surface-disturbing activities. CSU stipulations in existing and proposed ACECs on 7,440 acres, 8,630 acres, and 99,060 acres under Alternatives A, B, and C/D, respectively, would help reduce soil erosion by controlling surface disturbances.

IMPACTS FROM RECREATION AND MOTORIZED VEHICLE TRAVEL MANAGEMENT

All Alternatives

Recreation impacts on surface water would depend upon the types and numbers of facilities and other management (e.g., targeted activities, desired settings, etc.) (see Chapter 2, Recreation Section) provided within special recreation management areas (SRMAs) and the types of recreation activities allowed outside the SRMA. Impacts also would depend upon the types of stipulations in place to protect soils from burnoff, types of motorized travel allowed, and soil conditions. Vehicle use of unimproved roads during wet or moist conditions is a major cause of accelerated road deterioration and gully erosion. Off-road vehicle use destroys soil-stabilizing vegetation, damages soil properties in place by compaction, and reduces soil water infiltration.

Constructing camping areas, boat ramps, trails and parking areas would degrade local surface water quality and cause increases in fecal coliform bacteria levels in the White River, depending on boat and camp use.

Localized adverse and beneficial impacts could result from the proposed wilderness designation for Bull Canyon, Willow Creek, and Skull Creek WSAs. Increases in sediment yield from surface erosion of compacted trails and parking areas would occur from construction and visitor use, degrading local surface water quality. Primitive area designation would be beneficial to water resources by limiting motorized vehicle travel and reducing surface disturbance.

Alternative A

Soil losses would occur from vehicles driving off existing roads and trails, road/facility construction and visitors use. A loss of productivity would occur by damaging soil properties in place by compaction, thus reducing soil water infiltration. Enforcing the NSO stipulations in the soil MPAs (16,490 acres) and the Baxter/Douglas landslide areas (7,200 acres) would prevent the construction of developed recreation sites in these areas. The White River ERMA contains an additional 806,400 acres (44 percent resource area total) of fragile and/or saline soils. These soils would not be subject to soils stipulations and, as a result, an increase of sediment and salinity could occur in nearby drainages as a result of uncontrolled, unconfined recreation, especially off-road motorized vehicle travel.

Continuing vehicle use of unimproved roads during wet or moist conditions would continue to cause accelerated road deterioration and soil loss. Continuing off-road vehicle use would continue to destroy soil-stabilizing vegetation, damage soil properties in place by compaction and reduce soil water infiltration. An undetermined amount of sedimentation would occur to downstream drainage-ways in fragile, highly erosive or saline soil areas from an increase in roads and trails.

Restricting motorized vehicles to existing roads and trails in designated areas of critical environmental concern (8,740 acres), and soil MPAs in Piceance Basin (16,490 acres) would have positive benefits on surface water.

Limiting the Cow Creek Unit area to nonmotorized, walk-in hunting would be a benefit to water resources because these activities would not disturb erodible surfaces.

Alternative B

Removing the NSO stipulation on the Baxter/Douglas Pass areas and soil MPA would allow 830,100 acres of fragile/saline soils in the White River ERMA to be open to unconfined, dispersed recreational use. Vehicle travel during wet periods would be most damaging in terms of increased runoff and sedimentation.

Restricting motorized vehicle travel to existing roads and trails would reduce, by an undetermined amount, soil damage that is presently occurring from unrestricted off-road vehicle travel throughout most of the resource area (See Alternative A). Trying to maintain road density in critical wildlife habitat to 1.5 miles per square mile and 3 miles per square mile elsewhere in the resource area would reduce the amount of damage that is presently occurring from off-road travel. The amount of reduction cannot be quantified.

Alternatives C and D

Vehicle travel would be limited to designated roads and trails. Restricting motorized vehicle travel to designated roads and trails would reduce, by an undetermined amount, soil damage that is presently occurring from unrestricted off-road vehicle travel throughout most of the resource area (See Alternative A). Trying to maintain road density in critical wildlife habitat to 1.5 miles per square mile and 3 miles per square mile elsewhere in the resource area would reduce the amount of damage that is presently occurring from off-road travel.

Designating Coal Oil Basin open for motorized vehicle travel with little restrictions would expose 86,843 acres of fragile soils to destruction. Increased in sediment and salinity yields to nearby drainage ways would be expected because of the difficulty in reestablishing vegetation in these areas.

IMPACTS FROM FIRE MANAGEMENT

All Alternatives

Fireline construction and vegetation removal would cause short-term impacts to surface water management. Infiltration rates are likely to decline for a short period following fires, causing an increase in overland flows. Burned areas subjected to high intensity storms, prior to vegetation regrowth, contribute to flashy runoff and an increase in erosion and sediment yields. Surface disturbance associated with fire suppression in areas with fragile soils would increase the susceptibility of these soils to erosion. An NSO stipulation on Baxter/Douglas Pass and a CSU stipulation on soil MPAs in Piceance Basin would help protect 23,700 acres of fragile/saline soils or 3 percent of resource total.

CUMULATIVE IMPACTS ON SURFACE WATER MANAGEMENT

All Alternatives

Short- and long-term increases in sediment and salinity loads within local surface waters would be anticipated. These increased sediment and salinity loads would occur from any type of surface disturbing activity; many of these short-term erosion problems would be reduced by surface reclamation mitigation. However, a number of accelerated erosion and salinity problems (e.g., fragile and saline soils) would not be mitigated under current management actions, resulting in a declining trend in water quality and stream bank stabilization. The cumulative impacts of local stream additions on the quality of the White River cannot be quantified at present, but increases in both sediment and salinity concentrations would probably occur under all alternatives. During low flow periods, this impact would be most apparent within the Piceance Creek, Douglas Creek and the White River drainages because of the location of the energy activities.

Revegetating disturbed areas would help minimize raindrop impact, thereby improving soil water infiltration, water retention, and reducing overland flow and sedimentation to nearby drainages. On fragile soil sites, the revegetation process would be very slow due to an already-low productive soil usually high in salinity and low rainfall.

Prohibiting surface disturbance in no lease areas and NSO areas would prevent soil and surface water impacts caused by surface-disturbing activities. Conditioning development with TL and CSU stipulations (especially soils CSU stipulations) would help reduce impacts on surface water. The amount of protection is shown Table 4-2.

Table 4-2. Acres Subject to No Leasing and Surface Stipulations

Restriction	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Unavailable for Surface-Disturbing Activities				
No Leasing	42,780	42,780	58,350	42,780
Subject to NSO stipulations (includes those imposed by soils)	19,750	276,040	1,125,720	148,450

Table 4-2 continued

Restriction	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
Open to Surface Disturbing Activities But Subject to Surface Stipulations[3/]				
Subject TL stipulation	591,860	331,850	1,631,040	959,000
Subject to CSU stipulation (includes those imposed by soils)	831,380	1,050,120	1,528,230	1,228,280

N/A = Lease restrictions do not apply under this alternative.
Note: Columns cannot be totaled because many stipulations overlap one another.

Alternative A

Soil loss in the Baxter/Douglas Pass area would continue from natural process at the rate of 1 ton per acre per year. This would increase both salinity and sediment transport by an unquantifiable amount. Continuing to allow motorized vehicles to drive both on and off roads throughout the resource area would be most damaging. During low-flow periods, this impact would be most apparent within Douglas Creek, Piceance Creek, and the lower White River.

Alternative B

Opening the NSO areas on Baxter/Douglas Passes could be very damaging to surface water resources. Soil erosion in this area would increase 800 percent (from 1 ton per acre per year to 8 tons per acre per year). This would increase sediment and salinity yields into nearby streams and drainages by an unquantifiable amount. Restricting motorized travel to existing roads and trails would help reduce soils erosion by protecting soil stabilizing vegetation. Not applying the road density criteria to some of these existing roads or trails would continue to cause increases in sediment and salinity yields during wet periods.

Alternative C

Soil loss in the Baxter/Douglas Pass area would continue from natural process at the rate of 1 ton per acre per year. Placing fragile soils (791,300 acres) under the NSO stipulation would also restrict watershed treatments (e.g., gully plugs, check dams and pits) within fragile soil areas and could potentially increase sediment erosion and stream deposition in areas with already-accelerated erosion. The degree of impact could vary relative to future conditions of the watershed and the size of the actual area that is NSO.

Any surface-disturbing activity would contribute to short-term increased sediment and salinity yields. Stripping vegetation and displacing top soil would make the soil vulnerable to wind and water erosion, causing a decrease in the quality to nearby drainages.

Restricting vehicles to designated trails and reducing effective road density to 1.5 miles per square mile would be beneficial to surface water management. Vehicle use of unimproved roads during wet of moist conditions is a major cause of accelerated road deterioration and soil loss. Off-road vehicle use destroys soil-stabilizing vegetation, damages soil properties in place by compaction, and reduces soil-water infiltration.

Designating Coal Oil Basin open for motorized vehicle travel with little restrictions would expose 86,843 acres of fragile soils to destruction. Increased in sediment and salinity yields to nearby drainage ways would be expected because of the difficulty in reestablishing vegetation in these areas.

Implementing BMPs that improve vegetative cover and soil infiltration rates in disturbed areas would help minimize impacts.

Alternative D

Soil loss in the Baxter/Douglas Pass area would continue from natural process at the rate of 1 ton per acre per year.

Applying a 52,000-acre CSU stipulation on highly saline soils and using the BMPs listed in Appendix A as well as other BMPs, would help retain 8-20 tons per acre per year of salt.

Applying a CSU stipulation to 484,000 acres of fragile soils on slopes greater than 35 percent would reduce the potential

for erosion and mass wasting in these areas. Slopes greater than 35 percent (e.g., 3-1/2 rise in 10 feet of run) are considered critical in terms of increased erosion and potential for soil instability for construction purposes. Restricting motorized vehicles to designated roads and trails and applying road density criteria would allow road closures and rehabilitation to occur on needless roads.

Designating Coal Oil Basin open for motorized vehicle travel with little restrictions would expose 86,843 acres of fragile soils to destruction. Increased in sediment and salinity yields to nearby drainage ways would be expected because of the difficulty in reestablishing vegetation in these areas.

IMPACTS ON GROUNDWATER MANAGEMENT

IMPACTS FROM SURFACE WATER MANAGEMENT

All Alternatives

Applying water quality standards and antidegradation policy for both surface and groundwater would require surface-disturbing activities to be in compliance with basic standards and methodologies to ensure that state waters are maintained at existing quality unless it can be demonstrated that a change is necessary.

IMPACTS FROM SOILS, PLANT COMMUNITIES, RIPARIAN, TIMBERLANDS, WOODLANDS, LIVESTOCK GRAZING, WILD HORSE, BIG GAME, FISHERIES, AND FIRE MANAGEMENT

All Alternatives

Continuing to implement surface-disturbing projects (i.e., erosion control structures, water developments, vegetative manipulations, instream structures) in support of these programs could impact the ability of water to recharge aquifers. Recharge into formations that supply aquifers is dependent on the ability of that formation or soils to transmit water. Removal of vegetation, soil compaction, and trampling could reduce soil-water infiltration and alter the way water is captured and supplied to the water table. This alteration could cause a decline to nearby base flow (ground-water discharge) in perennial springs and streams.

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Disposing of water into evaporation ponds could degrade local ground water quality if ponds were not designed properly (i.e., use of lined vs. unlined pits, design capacity to hold 100-year, 6-hour storm event). Depending on the geologic formation, permeability of soils, and climatic conditions, degradation of ground water quality could occur.

Intercepting shallow aquifers by water source wells, geophysical shot holes, core test holes or monitoring wells could be damaging to ground water quality if not constructed to preclude interzonal migration of fluids from one water bearing zone to another. Reinjection of waste waters into deep wells is regulated by the state and would not cause adverse impacts to shallow useable aquifers.

IMPACTS FROM OIL SHALE MANAGEMENT

Alternative A

Developing oil shale would have the following effects on groundwater:

- Mine dewatering could affect flows of any springs or wells which derive water source from bedrock aquifer systems within the oil shale mineral development area.
- An increase in aquifer mixing would occur as a result of shaft and mine dewatering which could change the local direction of groundwater flow in the aquifer systems.
- Contamination from aquifer mixing and leaching of spent shale within the flooded retorts would cause degradation to springs and wells locally.

- In-situ leachates containing high levels of many inorganic and organic constituents and carried by groundwater may in time discharge into Piceance and Yellow Creeks, causing the quality of these streams to deteriorate.

- Leaching of surface (spent shale) spoil piles into the groundwater system could degrade groundwater or surface-water quality.

- Disruption of normal flows from wells and springs could occur from seismic activity in close proximity to the well or spring. Disruption could cause either an increase or decrease in flows.

Several private oil shale tracts are located adjacent to the resource area to the south. Although these tracts are contained in the Colorado River surface drainage system, the groundwater aquifer system appears to be in hydraulic connection with ground water in the White River Basin. The cumulative affects on groundwater from development of these surface drainages could adversely affect the hydrologic regime within the White River.

Alternatives B, C, and D

Impacts would be the same as identified under Alternative A except that application of BMPs would be applied to help mitigate any impacts.

IMPACTS FROM SODIUM MANAGEMENT

Alternative A

Continuing to pump groundwater for sodium development could affect ground water discharge to springs and streams in the surrounding area. Complete recovery through natural recharge would be expected to take in excess of 50 years. Significant impacts to local groundwater quality could occur as the result of brine leaking through well casings or through breaching of a solution cavity during collapse of a mine zone.

Alternatives B, C, and D

Impacts would be the same as described under Alternative A except that, in Alternative B, C and D, application of BMPs would be applied to help mitigate any impacts.

IMPACTS FROM COAL MANAGEMENT

Alternative A

Continuing to develop coal could deplete groundwater quantity, depending upon the formation being mined, the mining method, and the communication with water bearing strata. The removal of overburden and interburden during strip mining could destroy or deplete existing wells and springs. Resaturation could take 50 to 100 years after completion of mining. During this recovery time, increased well drilling and pumping costs could be expected.

Groundwater quality could be impacted regardless of the mining method. The most critical impact would be an increase in total dissolved solid (salinity) levels. This increase would be due to discharge of mine effluent into ephemeral drainages or replacement of portions of the aquifers by spoil materials in the immediate surroundings of the coal mine operation. Because degradation of groundwater quality would be a slow process, moving only a few hundred or few thousand feet from the reclaimed mine areas (Bishop et al. 1982), the impact would be considered to be insignificant.

Alternatives B, C, and D

Impacts would be the same as those described under Alternative A except that, application of BMPs would be applied to help mitigate any impacts.

IMPACTS FROM MINERAL MATERIALS MANAGEMENT

Alternative A

Extracting sand and gravel may affect the base flows (flows in perennial drainages from late summer through spring of the following year) in the river. Negative effects on groundwater would be in terms of quality change, depending on development extent and subsequent rehabilitation.

Alternatives B, C, and D

Impacts would be the same as those described under Alternative A except that, application of BMPs would be applied to help mitigate any impacts.

IMPACTS FROM VISUAL RESOURCES, RECREATION, AND MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A, B, and C

Continuing to construct roads and facilities and permitting off-road vehicle use would alter soil's natural ability to transmit water. This alteration in recharge areas could cause a decline in nearby base flows (ground-water discharge) in perennial springs and streams.

Alternative D

Impacts would be the same as described under Alternative A except that restricting motorized vehicle travel to designated roads and trails would help to prevent declines in the baseflows of perennial springs and streams.

CUMULATIVE IMPACTS ON GROUND WATER

All Alternatives

The cumulative affects of full scale oil shale development could adversely affect the overall hydrologic system within the White River.

Cumulative degradation or alteration of ground-water resources would probably occur from other underground distrubing activities (e.g., sodium, coal, mineral materials); although, most of the disturbances should be localized.

IMPACTS ON WATER RIGHTS MANAGEMENT

IMPACTS FROM SURFACE WATER, GROUND WATER AND WATER RIGHTS MANAGEMENT

All Alternatives

Watershed projects would be potential sources for water right filings. Protecting surface water quality would ensure the availability of potable water for past and future water right acquisitions.

Continuing to maintain the integrity of aquifer systems, both in quality and quantity, would ensure the availability of good quality water for past and future water right acquisitions.

IMPACTS FROM OIL AND GAS, OIL SHALE, SODIUM, AND COAL MANAGEMENT

Alternative A

Conversions of oil and gas wells to water wells (i.e. BLM manual 3160-4) would be potential sources for water right filings. In the past, lack of criteria for completing other types of wells (e.g., exploration, core hole, monitoring wells) to water wells have caused abandonment before proper completion and the acquisition of water rights are done.

Alternatives B, C, and D

Impacts would be the same as described under Alternative A except using BMPs would help eliminate impacts derived from wells other than oil and gas wells.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

All Alternatives

Implementing range projects (e.g., pits, reservoirs, spring developments) would create a potential source for water rights.

IMPACTS FROM FISHERIES MANAGEMENT

All Alternatives

Continuing to identify streams for instream flow surveys and surveying, in fisheries management, would complement the water rights' objective to make recommendations to the state for acquisition of instream flows.

CUMULATIVE IMPACTS ON WATER RIGHTS MANAGEMENT

All Alternatives

Any impacts to water rights as a result of BLM management decisions would have to be augmented through the state. Appropriations of water rights for future demand should be met for the resource areas planned projects except for during drought years and in over appropriated drainages. Should unforeseen projects require more than what is normally allocated to BLM, the demand may not be met.

IMPACTS ON OIL AND GAS MANAGEMENT

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Making 42,780 acres unavailable for oil and gas leasing in the long term would not affect oil and gas production because oil and gas potential in these areas is low.

Continuing to drill an estimated 50 wells per year over the next 10 to 15 years on lands available for leasing and development would yield approximately 86.7 million cubic feet of gas and produce approximately 11.5 million barrels of crude oil. Although exploration would continue at the above rate, production of gas and oil would decrease approximately 7 to 10 percent yearly.

IMPACTS FROM SOILS, T/E PLANTS, SENSITIVE PLANTS, WILDLIFE, CULTURAL, AND PALEONTOLOGICAL RESOURCE MANAGEMENT

All Alternatives

Applying NSO stipulations in the NSO soils areas, wildlife areas, in areas where T/E and sensitive plants/remnant vegetation association (RVA) densities are low or largely scattered, in ares with cultural resources, and in areas unimportant or limited fossils would not prevent oil and gas recovery but would increase development costs. Proposed oil and gas operations could most likely be relocated so that resources of concern would not be affected.
TL stipulations for wildlife would result in impacts that range from minor delays associated with a project to delays in exploration that incur high costs due to equipment stand-by time or potentially causing the lease to expire for lack of timely development.

CSU stipulations would require plans of operations and surveys and would increase costs to mitigate the impacts of development but would not prevent the recovery of oil and gas.

The cost of complying with NSO, CSU, and TL stipulations would vary depending on the distance for relocation and other mitigation required to prevent impacts on the resources of concern. The cost of relocating is minimal. The cost of direction drilling can double the cost to drill the well. Costs also would vary by alternative depending upon the number of acres subject to NSO, TL and CSU stipulations. Table 4-3 (Cumulative Impacts on Oil and Gas) lists the acres that would be subject to these stipulations.

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

Alternatives A and B

No impacts

Alternatives C and D

Requiring all construction equipment to be cleaned prior to entering the 497,900-acre weed-free zone and all reclamation seed, mulching material, etc, to be certified as weed free would add an undetermined amount to the cost of construction and reclamation projects. In addition, weed inventories would be required twice a year within the weed free zone.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Making 41,250 acres of wilderness study areas (WSAs) and 2,530 acres of scenic easement unavailable for oil and gas

leasing during wilderness interim management would not significantly affect production because oil and gas potential is low in these areas.

Making an additional 39,946 acres of WSAs in Black Mountain, Windy Gulch, and Oil Spring Mountain unavailable for oil and gas leasing and development during wilderness interim management would temporarily prevent oil and gas recovery. These WSAs are not recommended for wilderness designation and are expected to be opened for oil and gas leasing once Congress adopts the wilderness recommendations. These WSAs have high development potential but adjacent production is not significant in terms of volumes produced.

IMPACTS FROM VISUAL RESOURCES MANAGEMENT

All Alternatives

Prohibiting development in Class I areas would not affect oil and gas production because oil and gas potential in these areas is low. Restricting oil and gas activities in Class II areas would increase production costs by requiring companies to construct facilities so as to repeat basic elements of landscape form, line, color, and texture and not attract the attention of casual observers. The amount of increased costs cannot be quantified. VRM Classifications III and Class IV would not affect oil and gas production because these classifications allow more liberal development. Table 4-3 lists the number of acres closed or restricted by VRM classifications.

Table 4-3. Acres Subject to VRM Classifications

VRM Class	Alt A	Alt B	Alt C	Alt D
I	0	41,250	41,250	41,250
II	460,700	429,000	434,760	412,250
III	403,100	414,450	839,760	861,680
IV	1,415,800	1,403,320	146,100	146,100

IMPACTS FROM AREAS OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT

All Alternatives

Applying NSO stipulations in the following ACECs could result in a lost opportunity to extract oil and gas from the entire ACEC: Black's Gulch, Coal Draw, North Cathedral Bluffs, South Cathedral Bluffs, and Raven Ridge ACECs. However, most of the ACECs are lenticular in nature and could be developed with the use of directional drilling.

Applying NSO stipulations in the remaining ACECs would not prevent recovery because wells could most likely be relocated so that resources of concern would not be affected or the ACECs could be directionally drilled. All of the ACECs are underlain by formations determined to have high potential for the presence of hydrocarbons.

CUMULATIVE IMPACTS ON OIL AND GAS

Continuing to drill an estimated 50 wells per year over the next 10 to 15 years would yield approximately 86.7 million cubic feet of gas and produce approximately 11.5 million barrels of crude oil. Even though exploration would continue at the above rate, production is anticipated to decrease approximately 7 to 10 percent yearly.

Applying NSO, TL, and CSU stipulations to protect other resources would increase costs of extraction but would not likely prevent recovery. Costs would vary depending upon the type of mitigation applied. Costs would also vary by alternative depending on the number of areas subject to these stipulations (Table 4-4).

Table 4-4. Acres Subject to Surface Stipulations

Stip	Alt A	Alt B	Alt C	Alt D
NSO	19,750	276,040	1,125,720	148,450
TL	591,860	331,850	1,631,040	959,000
CSU	831,380	1,050,120	1,528,230	1,228,280

N/Note: Columns cannot be totaled because many stipulations overlap one another.

IMPACTS ON OIL SHALE MANAGEMENT

IMPACTS FROM OIL SHALE AND SODIUM MANAGEMENT

All Alternatives

Making the multimineral zone (70,820 acres) unavailable for oil shale leasing until all minerals present (oil shale, nahcolite, and dawsonite) can be successfully recovered would result a lost opportunity to develop oil shale while the restriction is in effect. This would not affect the oil shale industry in the short term because oil shale is not expected to be developed during the life of this plan (15-20 years), and in the long-term a opportunity exists to improve technology so that all minerals can be recovered.

Making 223,860 acres available for oil shale leasing and development (39,140 acres for open pit mining) would provide an estimated 19 to 25.5 billion barrels of kerogen using today's technology. When technology has been developed, this could be a valuable resource and could supply 6 to 8 years of the country's current total demand for crude oil.

IMPACTS FROM AIR QUALITY, SURFACE WATER, AND GROUND WATER MANAGEMENT

Analyzing areas near the Dinosaur National Monument (DNM) for visibility impacts prior to issuing a emissions permit would affect oil shale mining. Oil shale operations emit pollution that would be visible near the DNM.

Continuing to comply with existing laws and policies for the protection of air and water quality would cause an adverse economic impact on oil shale mining proposals. Actual costs of the air monitoring program would depend on the size of the operation and the type of mining method being proposed. Monitoring of surface water would add a minimum of $10,000 per year to a mining operations budget. Developing wells for monitoring aquifer changes would be dependent on the size of the proposed operation and would vary in cost, averaging around $75,000 per completed well.

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Making the Piceance Dome (51,350 ACRES) unavailable for oil shale leasing because of extensive oil and gas development and unfavorable geologic settings for oil shale would preclude the extraction of an estimated 5 billion barrels of kerogen until favorable development technology could be developed.

IMPACTS FROM SOILS, T/E PLANTS, SENSITIVE PLANTS, WILDLIFE, CULTURAL RESOURCE, PALEONTOLOGICAL RESOURCE, AND ACEC MANAGEMENT

All Alternatives

NSO stipulations in areas identified for open pit mining (39,140 acres) would make those lands unavailable unless the NSO stipulations could be exempted by environmental analysis based on engineered reclamation plans and surveys that showed the resource of concern would not be affected or could be avoided.

NSO stipulations in areas identified for underground mining would prohibit surface occupancy and disturbance but would not prevent underground development. Mitigation would be included in any approved mine plan. The aerial extent of plant populations should be such that the siting of surface facilities could avoid plant populations without causing significant impacts. The plant habitat normally occurs on lenticular exposures of a certain geologic formation. This fact should serve to reduce the cost of inventory as well as increasing the ability to be able to avoid plant populations. Inventory costs can vary depending on the size of the project and source of expertise conducting the inventory.

Applying TL would make not prevent recovery of oil shale but could increase mining costs. TL stipulations would apply to exploration and pre-mine plan approval activities and would likely only cause a delay in the those activities. Approved mine plans would have mitigation built in to address these issues. Costs associated with seasonal restrictions would be minor, including delaying activities for one full nesting season to conduct raptor inventories.

CSU stipulations would require engineering/reclamation plans for soils and surveys for T/E plants, sensitive plants, cultural, and paleontological resources. This stipulation would increase mining costs but would not prevent recovery of the resource since proposed operations could be relocated to avoid the resource of concern or could be designed to mitigate impacts to an acceptable level. CSU stipulations also could be exempted through environmental analysis.

The cost of complying with surface stipulations is would vary depending upon the type of mitigation required and distances to relocate. The costs would also vary by alternative depending upon the number of acres subject to stipulations (see Cumulative Impacts on Oil Shale).

IMPACTS FROM WITHDRAWALS

Alternatives A, C, and D

No impacts

Alternative B

Revoking the oil shale withdrawal would open additional lands to the location of mining claims. The potential for the presence of locatable minerals is low within the area covered by the withdrawal. However, the location of a mining claim could impact current and future oil shale development plans even if the claims were determined not to be valid. The procedures to test the validity of a mining claim can take a number of years to process. All proposed management actions encumbered by mining claims would likely be placed on hold pending validity determinations.

CUMULATIVE IMPACTS ON OIL SHALE MANAGEMENT

All Alternatives

Making 223,860 acres available for oil shale leasing and development (39,140 acres for open pit mining) would provide an estimated 19 to 25.5 billion barrels of kerogen using today's technology.

Applying NSO, TL, and CSU stipulations for soils, T/E plants, sensitive plants, wildlife, cultural resources, and paleontological resources would not make lands unavailable for leasing and development but would likely increase mining costs.

The cost of complying with surface stipulations varies with the restrictions necessary to mitigate impacts to an acceptable level and distance to relocate operations. The cost also vary by alternative depending on the number of acres subject to stipulations (Table 4-5):

Table 4-5. Acres of Oil Shale Lands Affected by Surface Stipulations

Stip.	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)
NSO	6,180	15,530	40,770	12,040
TL	23,540	44,750	219,220	83,410
CSU	14,860	35,500	85,170	99,880

Applicants would need to consider the costs associated with the above stipulations as well as the costs associated with (1) air quality monitoring, (2) surface water quality monitoring (gauge stations), and (3) ground water quality monitoring (monitor wells). The costs associated with botanical, cultural resource, and paleontological inventories would be included in the costs of some of the NSO and CSU stipulations. There would be some overlap between the different acreage restrictions identified above.

IMPACTS ON SODIUM MANAGEMENT

IMPACTS FROM SODIUM AND OIL SHALE MANAGEMENT

All Alternatives

Making the multimineral zone (70,820 acres) unavailable for sodium leasing until all minerals present (oil shale, nahcolite, and dawsonite) can be successfully recovered would result a lost opportunity to develop sodium within that area while the restriction is in effect. This would not have a significant effect on the sodium industry because of the undeveloped existing leases encumbering the area (16,620 acres under lease).

Continuing to prohibit the mining of sodium if it would adversely affect the minability of oil shale, and using

existing lease developments to determine whether sodium could be mined, could delay the future leasing of sodium. Considering multimineral research scale tracts based on the merits of each proposal could allow development estimated in place reserve of 38.7 billion tons of combined nahcolite and dawsonite (Beard, et al., 1974).

IMPACTS FROM AIR QUALITY, SURFACE WATER, AND GROUND WATER MANAGEMENT

All Alternatives

Continuing to comply with existing laws and policies for the protection of air and water quality would cause an adverse economic impact on sodium mining proposals.

Actual costs of the air monitoring program would depend on the size of the operation and the type of mining method being proposed. Monitoring of surface water would add a minimum of $10,000 per year to a mining operations budget. Developing wells for monitoring aquifer changes would be dependent on the size of the proposed operation and would vary in cost, averaging around $75,000 per completed well.

IMPACTS FROM SOILS, T/E PLANTS, SENSITIVE PLANTS, WILDLIFE, ACEC, CULTURAL, AND PALEONTOLOGICAL RESOURCE MANAGEMENT

All Alternatives

NSO stipulations would prohibit surface occupancy and disturbance but would not prevent development. NSO stipulations in these areas could preclude certain mining methods. Mitigation would be included in any approved mine plan. The aerial extent of plant populations should be such that the siting of surface facilities could avoid plant populations without causing significant impacts. The plant habitat normally occurs on lenticular exposures of a certain geologic formation. This fact should serve to reduce the cost of inventory as well as increasing the ability to be able to avoid plant populations. Inventory costs can vary depending on the size of the project and source of expertise conducting the inventory.

Applying TL stipulations would not prevent recovery of sodium but could increase exploration costs. TL stipulations would apply to exploration and pre-mine plan approval activities and would likely only cause a delay in the those activities. Approved mine plans would have mitigation built in to address these issues. Costs associated with seasonal restrictions would be minor, but delaying activities for one full nesting season to conduct raptor inventories (proposed under Alternatives C and D) would be significant, especially for smaller companies.

CSU stipulations would require engineering/reclamation plans for soils and surveys for T/E plants, sensitive plants, cultural, and paleontological resources. This stipulation would increase mining costs but would not prevent recovery of the resource since proposed operations could be relocated to avoid the resource of concern or could be designed to mitigate impacts to an acceptable level. CSU stipulations also could be exempted through environmental analysis.

The cost of complying with surface stipulations would vary depending upon the type of mitigation required and distances to relocate surface disturbing activities. The costs would also vary by alternative depending upon the number of acres subject to stipulations (see Cumulative Impacts on Sodium).

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Making the sodium resource underlying the Piceance Dome area unavailable for leasing in order to comply with development restrictions on oil shale, would affect approximately 4.1 billion tons of sodium reserve.

IMPACTS FROM WITHDRAWALS

Alternatives A, C, and D

Continuing the oil shale withdrawal (PLO 4522) would be a major obstacle to sodium development. Under terms of the withdrawal, lands containing sodium may be leased where ". . .development of these sodium deposits would not adversely affect the oil shale values of the lands." New leases would be issued subject to "Extractive operations . . . will be restricted to those beds valuable for sodium . . . workable without removal of significant amounts of organic matter and without significant damage to oil shale beds."

Further sodium-only development may be precluded if existing lease developments cannot show that development can occur without harming the oil shale resource.

Alternative B

Revoking the oil shale withdrawal would remove the oil shale resource protection placed on the existing sodium leases and could result in enhanced production levels from the existing sodium leases and add more interest for additional sodium-only leasing. However, other federal regulations that require the protection of multiple mineral resources as well as ensuring the integrity of aquifer systems, could cause additional restrictions to sodium development.

CUMULATIVE IMPACTS ON SODIUM

All Alternatives

Making 93,210 acres underlain by sodium available for sodium leasing would result in the opportunity to develop approximately 20.2 billion tons of sodium.

Applying NSO, TL, and CSU stipulations for soils, T/E plants, sensitive plants, wildlife, ACECs, cultural resources, and paleontological resources would not prevent sodium development but would increase mining costs associated with extracting sodium minerals.

The cost of complying with surface stipulations varies with the restrictions necessary to mitigate impacts to an acceptable level and distance to relocate operations. The costs also vary by alternative depending on the number of acres subject to stipulations (Table 4-6):

Table 4-6. Acres of Sodium Lands Affected by Surface Stipulations

Stip.	Alt A	Alt B	Alt C	Alt D
NSO	7,340	4,100	25,370	4,100
TL	105,180	18,420	76,670	64,670
CSU	1,640	37,540	39,270	73,150

- Applicants would need to consider the costs associated with the above stipulations as well as the costs associated with (1) air quality monitoring, (2) surface water quality monitoring (gauge stations), and (3) ground water quality monitoring (monitor wells). The costs associated with botanical, cultural resource, and paleontological inventories would be included in the costs of some of the NSO and CSU stipulations. There would be some overlap between the different acreage restrictions identified above.

IMPACTS ON COAL MANAGEMENT

IMPACTS FROM COAL MANAGEMENT

All Alternatives

Making 11,470 acres unsuitable for both surface and underground mining, based on demand and availability of coal elsewhere in the region, would not have a significant impact for this planning period.

Alternative A

Making 151,170 acres available for further coal leasing consideration adequately addresses future demand for this planning period.

Alternatives B, C, and D

Making 150,570 acres available for further coal leasing allows enough acreage available for the time involved in the management plan.

IMPACTS FROM AIR QUALITY, SOILS, AND SURFACE WATER MANAGEMENT

All Alternatives

Continuing to regulate surface coal mining and reclamation on federal lands, according to the Surface Mining Control and Reclamation Act (SMCRA), would require all exposed surface areas to be protected and stabilized to effectively control erosion and air pollution. Applying best management practices (BMPs) and SMCRA requirements to the acres available for coal development and would have an economic impact on developers. The requirement to control fugitive dust also would have an economic impact on the lease holders. Operators are required to pay for the suppression of fugitive dust along roadways and on coal

transfer and storage areas. The amount of impact would vary depending on the size and location of the operation.

IMPACTS FROM SOILS, T/E PLANTS, SENSITIVE PLANTS, WILDLIFE, ACEC, CULTURAL, AND PALEONTOLOGICAL RESOURCE MANAGEMENT

All Alternatives

Applying NSO stipulations on the acres suitable for further leasing consideration could make lands identified for surface mining unavailable for surface mining unless the stipulation could be exempted through environmental analysis. The mitigation required for exemption would make the coal more difficult to recover, thus increasing development costs. NSO should have little impact on those areas identified for underground mining. The total NSO would apply to 2 percent, 6 percent, 38 percent, and 14 percent of land available for coal leasing under Alternatives A, B, C, and D, respectively.

TL and CSU stipulations on lands suitable for further leasing consideration would make the lands more difficult to mine because of constraints placed on development. Most likely these stipulations would increase costs for coal companies. CSU stipulations would require engineering/reclamation plans for soils and surveys for T/E plants, sensitive plants, cultural resource sites, and fossils. Mining operations are limited by sequence, topography, amount of overburden, coal quality, and several other factors. Inaccessibility to one small area may prevent a larger block from being recovered. The CSU could create a timing delay which could economically impact a project by causing the operator to pay stand by charges for idle equipment. Approved mine plans would have mitigation built in to address these issues. If advanced planning were exercised, TL and CSU limitations in a proposed area would not have a significant economical impact.

Costs associated with many of the NSO, TL, and CSU stipulations would be minor except for the stipulation to delay activities for one full nesting season to conduct raptor inventories (proposed under Alternatives C and D). This stipulation would be significant for smaller companies. The cost of complying with surface stipulations is unquantifiable. The acres of coal lands that would be affected by surface stipulations would vary by alternative (see Cumulative Impacts on Coal).

IMPACTS FROM OIL AND GAS MANAGEMENT

Alternatives A, B, and D

Continuing to prohibit underground coal mining within 300 feet of a gas or oil well could alter the mine plan and create a loss of coal resources.

Alternative C

No impacts

IMPACTS FROM WILD HORSE MANAGEMENT

Alternatives A and B

No impacts

Alternatives C and D

Requiring unrestricted wild horse movement between summer and winter range, replacement of disturbed watering areas, and possible habitat improvement on 5,900 acres of the area suitable for both surface and subsurface coal development would create an economic impact on surface operations and may prevent the existence of a smaller operation.

CUMULATIVE IMPACTS ON COAL

All Alternatives

Making 11,470 acres of coal lands unsuitable for both surface and underground mining would not have a significant impact for that planning period. Making 151,170 acres under Alternative A and 150,570 acres under Alternatives B, C, and D available for further coal leasing satisfy existing and anticipated future demand for this planning period.

NSO stipulations would make lands identified for surface mining unavailable unless the NSO stipulation could be exempted through environmental analysis. NSO stipulations would have little impact on underground mining, but would add to mining costs. The total NSO applies to 2 percent, 6

percent, 38 percent, and 14 percent of land available for coal leasing under Alternatives A, B, C, and D, respectively.

Advanced planning in TL and CSU stipulation areas would prevent significant economical impacts. Table 4-7 shows acres of surface stipulations affecting surface and/or underground coal development.

Table 4-7. Acres of Coal Lands Subject to Surface Stipulations

Stip.	Alt A	Alt B	Alt C	Alt D
NSO	2,700	9,300	57,090	21,690
TL	50,970	50,970	71,670	107,070
CSU	70,900	39,000	91,500	78,190

The total affected acreage is not the cumulative sum of the affected areas due to overlap of the various resources.

IMPACTS ON MINERAL MATERIALS MANAGEMENT

IMPACTS FROM AIR QUALITY MANAGEMENT

All Alternatives

Continuing to apply BMPs to permits to reduce potential for sources of fugitive dust would be an economic impact to permit holders, and the impact would vary by the size and location of the permit. Permit holders could be required to pay the cost of applying water or some other dust suppressant to several miles of road surface to control dust resulting from the operation.

IMPACTS FROM SOILS, T/E PLANTS, SENSITIVE PLANTS, WILDLIFE, ACEC, CULTURAL, AND PALEONTOLOGICAL RESOURCE MANAGEMENT

All Alternatives

NSO stipulations would preclude certain mineral materials extraction in NSO areas unless projects could be designed to mitigate the resources of concern or the stipulation could be exempted through environmental analysis. Mitigation would be included in any approved mine plan. The aerial extent of plant populations should be such that the siting of surface facilities could avoid plant populations without causing significant impacts. The plant habitat normally occurs on lenticular exposures of a certain geologic formation. This fact should serve to reduce the cost of inventory as well as increasing the ability to be able to avoid plant populations. Inventory costs can vary depending on the size of the project and source of expertise conducting the inventory.

Applying TL would make not prevent recovery of mineral materials. TL stipulations would apply to exploration and pre-mine plan approval activities and would likely only cause a delay in the those activities. Approved mine plans would have mitigation built in to address these issues. Costs associated with seasonal restrictions would be minor, but delaying activities for one full nesting season to conduct raptor inventories (proposed under Alternatives C and D) would be significant, especially for smaller companies and could force applicants to secure material from other sources, such as private or state lands.

CSU stipulations would require engineering/reclamation plans for soils and surveys for T/E plants, sensitive plants, cultural resource, and paleontological fossils. This stipulation would increase mining costs but would not prevent recovery of the resource since proposed operations could be relocated to avoid the resource of concern or could be designed to mitigate impacts to an acceptable level. CSU stipulations also could be exempted through environmental analysis.

The cost of complying with surface stipulations would vary depending upon the type of mitigation required and hauling distances to markets. The added costs involved may or may not preclude mineral material disposal actions. Smaller operations may not be able to afford the added cost. The costs would also vary by alternative depending upon the number of acres subject to stipulations (see Cumulative Impacts on Mineral Materials).

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

Alternatives A and B

No impacts

Alternatives C and D

Requiring weed free equipment and certified weed free seed and mulch material within 660,110 acres delineated as weed-free zones would add to the cost of removing mineral material as well as increasing the cost of reclamation. In addition, requiring weed inventories twice a year within the area of disturbance would likely preclude disposal actions to individuals and small companies due to the increase in costs. This could lead to less road maintenance which could lead to increased sediment load to local streams.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Continuing to apply CSU on up to 290 acres of high priority riparian and on 120 acres of medium priority riparian habitat would potentially make these areas unavailable for mineral material disposal actions. In addition, approximately 420 acres of stream occupied by beaver colonies would have NSO restrictions. This would leave in place the most recent deposits of good quality sand and gravel, especially along the White River. However, the older sand and gravel deposits on terraces adjacent to the current riparian areas would be available for disposal.

Alternatives B, C, and D

Designating CSU on approximately 407 acres of high and medium priority riparian habitat would prevent recent deposits of good quality sand and gravel from being available for disposal within these zones. This would force applicants to secure needed material from other sources.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

Alternative A

Continuing to apply TL stipulations on approximately 11,680 acres of bald eagle habitat to reduce impacts during roosting, feeding or perching and NSO stipulations on 4,560 acres in the Lake and Soldier Creek valleys, in order to promote recovery of Colorado River cutthroat trout, could be a significant impact on any activity proposed in these areas. The bald eagle habitat is normally along stream areas where good quality sand and gravel have been deposited. Sand and gravel occurring in these areas would not be available for disposal.

Alternative B

Implementing CSU stipulations on 58,790 acres would require the applicant to submit plans of development which demonstrate that the project will not affect the black-footed ferret reintroduction effort. Approximately 840 acres would not be available for disposal actions due to NSO around bald eagle roost and concentration areas. An additional 4,840 acres would have TL stipulations because of a 1/2-mile buffer around the bald eagle winter roost and concentration areas. NSO areas would not be available for disposal actions. Some of these areas could contain high quality sand and gravel deposits. TL stipulations could force applicants to secure material from another source if they could not wait for the limitation to expire which could mean that material would need to be hauled a number of miles which would increase the cost of material.

Alternative C

Implementing CSU stipulations on 58,790 acres would require the applicant to submit Plans of Development which demonstrate that the project would not affect the black-footed ferret reintroduction effort. Designating NSO on approximately 4,090 acres of bald eagle roost and concentration areas would make these potentially high quality sand and gravel areas unavailable for disposal. TL stipulations on 12,710 acres would provide a 1/2-mile buffer around the same winter roost and concentration areas, forcing applicants to secure material from another source if they could not wait for the limitation to expire.

Designating CSU on 89,480 acres within the East Douglas, Trappers, and Big Beaver watersheds would require applicants to submit plans of development and reclamation plans to show that Colorado River cutthroat trout habitat would not be affected by their proposal. A lack of ability to provide mineral materials within an area of this size could present significant monitory impacts to most proposed projects, in that suitable material would have to be transported into this area. Many of these areas probably contain good quality mineral material deposits.

Alternative D

Designating NSO on 850 acres around bald eagle roost and concentration areas would make these areas not available for

disposal actions. Imposing an additional 4,840 acres of TL stipulations in a 1/2-mile buffer around the bald eagle winter roost and concentration areas could force applicants to secure material from another source if they could not wait for the limitation to expire. Applying CSU to 89,480 acres within the East Douglas, Trappers, and Big Beaver watersheds would require applicants to submit plans of development and reclamation plans to show that Colorado cutthroat trout habitat would not be affected by the proposal. Many of these areas probably contain good quality mineral material deposits. These deposits would not be available for disposal if conditions of the CSU could not be met.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Prohibiting mineral development in wilderness study areas during interim management (40,090 acres) and wilderness areas (41,250 acres) would not affect mineral materials production because suitable deposits areas are located adjacent to these areas.

IMPACTS FROM VISUAL RESOURCE MANAGEMENT

All Alternatives

Prohibiting mineral material extractions in Class I areas would not affect mineral material extraction because suitable deposits are available adjacent to these areas. Restricting mineral materials activities in Class II could result in companies having to go outside of these areas and could increase material costs.

CUMULATIVE IMPACTS ON MINERAL MATERIALS MANAGEMENT

All Alternatives

Making 1,710,370 acres, 1,690,970 acres, 830,650 acres, and 1,643,480 acres available for mineral materials extraction under Alternatives A, B, C, and D, respectively, would leave sufficient area available for the extraction of mineral materials and would supply demand for these materials.

NSO, TL, and CSU surface stipulations would cause companies to go elsewhere to extract mineral materials. This could increase the cost of material because of longer hauling costs.

Table 4-8. Acres of Mineral Materials Subject to Surface Stipulations

Stip	Alt A	Alt B	Alt C	Alt D
NSO	62,300	111,480	1,143,110	149,290
TL	591,860	40,660	1,520,390	1,279,110
CSU	25,630	22,170	1,264,210	1,937,750

Overlap occurs between stipulations

In addition to the above constraints, permittees would also have added costs associated with the control of fugitive dust from their operation, controlling noxious weeds, assuring that equipment and reclamation materials were free of weeds in the weed free zones.

IMPACTS ON LOCATABLE MINERALS MANAGEMENT

IMPACTS FROM WITHDRAWALS

All Alternatives

Withdrawing lands from mineral location would reduce the total number of acres open to prospecting and development. However, the potential for locatable mineral development in the White River Resource Area is very low. Only vanadium/uranium have been mined to some limited extent in the early 1900s and then later in the 1940s and early 1950s. The possibility of mining claim development is considered to be unlikely.

IMPACTS ON PLANT COMMUNITIES MANAGEMENT

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

Alternative A

Continuing to use non-native species in reclamation would not pose any significant threat of expanding onto and replacing native species in untreated areas and would provide the following significant benefits difficult to achieve with native species alone:

1. Non-native reclamation species compete better than native species with a host of aggressive non-native annual weeds.

2. Non-native reclamation species are capable of decreasing the expansion of noxious weeds because of their competitive advantage in establishing on disturbed sites.

3. The non-native reclamation species are replicating the ecosystem functions of the native species which they are replacing.

4. Non-native species have superior tolerance to grazing, giving them the advantage of establishing in areas subject to intense grazing pressure.

Alternatives B, C, and D

Emphasizing the improvement of plant species composition on all mid- and early-seral shrubland communities would result in no substantial improvement in shrubland plant communities above that identified for Alternative A. No additional vegetation manipulations above those identified under Alternative A would be conducted.

Using standard seed mixes (non-native species) would result in the same impacts as noted for Alternative A. The use of non-native species in reclamation would impact about 7 percent of the BLM land in the planning area (43,530 acres from past treatments and 56,210 acres proposed treatments. Treatments proposed would result in 17,730 fewer acres impacted from use of non-native reclamation species than projected under Alternative A.

IMPACTS FROM SOILS MANAGEMENT

All Alternatives

Continuing to implement proposed management actions would emphasize soil protection which would improve vegetation. Short-term losses of vegetation would occur with development of some watershed improvement projects, involving surface disturbance, but improved watershed conditions would have a long-term positive impact on vegetation resources.

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Implementing surface-disturbing activities associated with oil and gas exploration and development would destroy vegetation. Site-specific impacts would vary from moderate to significant, depending upon the stage of mineral development (exploration vs. production), the plant community impacted, and the soil conditions.

Developing oil and gas would reduce vigor and productivity of residual plants through mechanical damage, soil compaction, and dust as a result of vehicle use. Soil compaction would inhibit revegetation efforts. Reduced vigor as well as mechanical injuries make some plants, such as trees, more susceptible to drought or attack from insects and/or disease. The ability of plant communities to recover from disturbance would depend upon the composition of the disturbed community. Shrubland and woodland would require more time to recover than grasslands.

Long-term impacts would occur on 6,460 acres of shrubland and 11,060 acres of pinyon/juniper woodland communities. Using the 55 percent reclamation rate of the past, approximately 7,530 acres of BLM land would be removed and 9,980 acres would be returned to vegetation production. Oil and gas production is expected to decrease annual forage production on the 7,530 acres taken from production, by about 3,000 tons based upon an average 800 pounds of annual forage production per acre.

Considering that half of this annual forage production would be allocated for watershed protection and remain on site, the remaining 50 percent would be used by grazing animals. This represents a long-term loss of about 3,000 AUMs (animal unit months).

IMPACTS FROM OIL SHALE AND SODIUM MANAGEMENT

All Alternatives

Disturbing the surface during oil shale and sodium development would result in similar impacts as described for oil and gas management. Long-term impacts to species composition and vegetation structure would occur on 620 acres of pinyon/juniper communities and on 270 acres of shrubland communities. An estimated 400 acres of BLM land would be taken from forage production during the long term. Annual forage production availability would decrease by 320,000 pounds of forage. With half allocated for non-consumptive use, forage loss would amount to about 160 AUMs per year for grazing animals.

IMPACTS FROM COAL MANAGEMENT

All Alternatives

Continuing to develop coal would result in surface disturbance with impacts similar to those described for oil and gas management. Long-term impacts to species composition and vegetation structure would occur on about 30 acres of pinyon/juniper communities and on about 170 acres of shrubland communities. About 90 acres of BLM land would be taken from forage production in the long term resulting in an annual loss of about 72,000 pounds of forage production. This would decrease forage available to grazing animals by about 36 AUMs.

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Continuing existing management would result in a 3 percent per year increase of noxious weed infestation within the resource area. This trend would be irreversible, and the lost production would be irretrievable. Weed infestations would negatively impact plant communities, reduce rangeland productivity, and diminish recreation and aesthetic values. Weed infestations would affect the economics of all land uses and result in economic losses far exceeding the cost of a well planned, full funded, integrated noxious weed program.

Allowing unrestricted motorized vehicle travel and using heavy equipment in the building of well sites, roads, pipelines, and other facilities would create a high potential for spreading noxious weeds. While proper revegetation of disturbed areas would tend to reduce both the occurrence and rate of spread of noxious weeds, essentially nothing can reverse the establishment of noxious weeds on a previously unaffected site.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

No impacts

Alternatives B, C, and D

Improving conditions on about 170 acres of riparian habitat and about 980 acres of wetlands would result in 1,630 acres of riparian and wetland habitats being in proper functioning condition and only 540 acres remaining in improper functioning condition within 10 years.

IMPACTS FROM TIMBER AND WOODLANDS MANAGEMENT

Alternatives A and C

No impacts

Alternative B

Harvesting Douglas-fir would impact 290 acres over a 20-year period through removal of older trees. If this harvest occurred totally within the forests classified as the potential natural community (PNC), about 3 percent of the current PNC Douglas-fir stands could be converted to a late seral-plant community. Harvest within Douglas-fir stands with insect infestations could remove infected trees and maintain the ecological site classification for the treated site.

Harvesting pinyon-juniper woodland communities would result in fewer PNC and late-seral pinyon-juniper woodlands under the harvest rotation proposed.

Alternative D

Harvesting Douglas-fir communities would impact 80 acres over a 20-year period through removal of older trees. If this harvest occurred totally within the forests classified as the PNC, less the 1 percent of the current PNC Douglas-fir stands would be converted to a late-seral plant community. Harvesting Douglas-fir stands with insect infestations would remove infected trees and maintain the ecological site classification for the treated site.

Harvesting aspen would not decrease the ecological site classification for the treated site. Most aspen stands targeted for treatment have very little regeneration and would benefit from removal of older trees.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

All Alternatives

Allocating vegetation would increase desirable species in the vegetation composition by providing proper use levels of current annual forage production. Implementing minimum rest periods would provide undisturbed growth and development of forage plants during critical growth periods, resulting in increased vegetation production and increased vigor, seed production, litter accumulation, and seedling establishment. Improved vigor and reproduction in desirable species would enable them to compete more favorably with less desirable species. Deferring or delaying the grazing period during the spring or early summer growing periods, followed by a moderate level of grazing use, would favor desirable forage species, primarily perennial grasses. Continued use of these two management tools should maintain desirable forage species in a healthy, vigorous condition and on a sustained yield basis.

Shifting to perennial grass dominance on most shrub-dominated rangelands would improve rangeland condition by increasing the plant community seral phase from a mid-seral community to a high-seral community.

Continuing to implement the livestock grazing management proposal would result in improvement of desirable plant species on approximately 210,000 acres of BLM land. Improving the distribution and handling of livestock and increase the quality and quantity of forage available for livestock would result in a more uniform use of forage and complement the effects of vegetation allocation and minimum rest requirements. Constructing fences and water developments would cause a short-term removal of vegetation on 1,100 acres. Within a few years, about 650 acres would be returned to forage production, leaving approximately 100 acres occupied by facilities and 350 acres barren, primarily due to livestock and wildlife trampling and grazing on areas directly adjacent to water developments. New facilities, especially water developments, would increase grazing use in previously-unavailable areas to livestock and relieve grazing pressure around existing watering areas. Improved distribution would be a major contributor to the expected changes in rangeland conditions noted above.

Treating 14,550 acres of encroaching pinyon/juniper (5,000 acres mechanically) would decrease the composition of invading pinyon or juniper and increase perennial forbs, grasses and shrubs, moving the ecological site classification on treated sites from a mid-seral to a high-seral plant community. Prescribed burning on 9,550 acres of encroaching pinyon/juniper woodlands would change the composition to perennial grasses and forbs early after treatment with gradual increases in perennial shrubs within 5 to 10 years following burning. Treating 9,710 acres of pinyon/juniper on ecologically-classified woodland sites would convert stands to a mid-seral community, and the PNC could be lost for over 300 years.

Continuing to apply prescribed fire treatments on 27,870 acres of over-mature mountain shrub communities would reduce the shrub overstory and increase understory production of perennial grasses and forbs. Treating those areas mechanically or with chemicals, where edge effect and suitable wildlife cover cannot be achieved by prescribed burning, would result in communities remaining in mid-seral sagebrush.

Treating 19,750 acres of sagebrush and forbs with chemicals would improve about 90 percent from a mid-seral to late-seral sagebrush community, and about 10 percent would improve from a mid-seral to the potential natural sagebrush community. Prescribed burning on 48,880 acres of sagebrush plant communities would improve the site closer to the PNC than other treatment methods. Approximately 39,000 acres would improve to at least a late-seral plant community following recovery, and an estimated 25 percent of the 39,000 acres would continue to improve to the PNC within the 20-year planning period.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternatives A and B

Continuing to maintain a wild horse herd of 266 (126 horses above the maximum allocation level), in the Piceance Basin-East Douglas Herd Management Area (HMA), would use about 1,512 AUMs of forage allocated for watershed protection, wildlife forage, or livestock forage. Until horse numbers are brought to within allocation levels on a continual basis, recovery of key rangeland sites would not occur.

Removing wild horses from North Piceance and West Douglas herd areas would provide adequate rest from grazing and improved levels of use on key rangeland sites currently in an early-seral plant community. An estimated 25 percent of rangeland sites currently in an early-seral phase would improve to a mid-seral plant community during the life of this plan, and the remaining 75 percent would improve but not sufficiently to be classified as mid-seral.

Keeping horse numbers below 140 animals on the Piceance Basin/East Douglas HMA, and not allowing fluctuation as in the past, would result in improvements on some early-seral rangeland communities that are not near watering areas and would receive very little use or only short duration use. An estimated 50 percent of the early seral-plant communities would improve to a mid-seral plant community provided horse densities remain low. The remaining 50 percent would continue in an early-seral plant community, lacking sufficient opportunity for improvement because of their proximity to water.

Alternative C

Maintaining an estimated average herd size of 50 wild horses in both the West Douglas and North Piceance Herd Areas (currently, there are 87 horses in each herd area) would result in the use of forage allocated to other uses. Wild horses are currently utilizing about 1,044 AUMs of forage within each herd area which was allocated for watershed protection, wildlife forage, or livestock forage. Management actions proposed are slightly less than historical use. No significant improvement in forage availability would be expected by limiting horse use to 900 AUMs within each herd area.

Maintaining wild horse numbers about 126 head above the maximum allocation level for the HMA would result in the use of about 1,512 AUMs of forage allocated for watershed protection, wildlife forage or livestock forage. Until horse numbers are brought to within allocation levels on a continual yearlong basis, recovery of key rangeland sites would not occur. Rangeland conditions are considerably below the PNC level for several key ecological sites within each herd area.

Keeping wild horse numbers on the Piceance Basin/East Douglas HMA below the 140 herd size, and not allowing herds to fluctuate as in the past, would begin improvement on some early-seral rangeland communities that are not near watering areas and are not continually grazed by horses because of spacial limitations created by the territorial nature of horses. It is estimated that 50 percent of the early-seral plant communities would improve to a mid-seral plant community lacking sufficient opportunity for improvement because of their proximity to water.

Alternative D

Maintaining an estimated average herd size of 50 wild horses in both the West Douglas and North Piceance Herd Areas (currently, there are 87 horses in each herd area) would result in the use of forage allocated to other uses. Wild horses are currently utilizing about 1,044 AUMs of forage within each herd area which was allocated for watershed protection, wildlife forage, or livestock forage. Management actions proposed are slightly less than historical use. No significant improvement in forage availability would be expected by limiting horse use to 900 AUMs within each herd area.

Maintaining wild horse numbers about 126 head above the maximum allocation level for the HMA would result in the use of about 1,512 AUMs of forage allocated for watershed protection, wildlife forage or livestock forage. Until horse numbers are brought to within allocation levels on a continual yearlong basis, recovery of key rangeland sites would not occur. Rangeland conditions are considerably below the PNC level for several key ecological sites within each herd area.

Keeping wild horse numbers on the Piceance Basin/East Douglas HMA below the 140 herd size, and not allowing herds to fluctuate as in the past, would begin improvement on some early-seral rangeland communities that are not near watering areas and are not continually grazed by horses because of spacial limitations created by the territorial nature of horses. It is estimated that 50 percent of the early-seral plant communities would improve to a mid-seral

plant community lacking sufficient opportunity for improvement because of their proximity to water.

Adding the Greasewood area to the HMA and not increasing forage allocations to horses would result in lower horse densities and improvement in 50 percent of the early-seral plant community lacking sufficient opportunity for improvement because of proximity to watering areas.

IMPACTS FROM BIG GAME MANAGEMENT

Alternative A

Continuing to improve forage production on 19,000 acres of antelope habitat (4,500 acres would be on critical winter range and 6,700 acres on winter range) would support the long-term antelope forage allocation of 207 AUMs with minimal impact to plant communities.

Continuing to improve forage production on 55,600 acres of elk habitat (including 31,200 acres of winter range) would support the long-term elk forage allocation of 5,004 AUMs with minimal impacts to plant communities. No improvement would occur on 4,600 acres of critical winter range which is primarily in the Danforth/Jensen Geographic Reference Area (GRA).

Improving forage production on 85,300 acres of deer winter range and 61,900 acres of deer summer range would support long-term deer forage allocations for all GRAs, except Danforth/Jensen and Piceance GRAs. No long-term improvement in forage production or availability would occur on 64,000 acres on deer severe winter ranges, of which 45,500 acres (70 percent) occur in the Piceance Basin GRA and 13,300 acres (20 percent) occur in the Danforth/Jensen GRA.

Manipulating 12,740 acres of aspen and Douglas-fir would change community structures, but the change in composition would not be sufficient to influence the ecological site classification of either community unless it occurred in a PNC. Treating mid-seral aspen communities could initiate an increase in the composition of desirable plant species that have been suppressed by past grazing pressure, moving it to a late-seral community.

Manipulating 20,040 acres in the mountain shrub community, 8,940 acres of sagebrush, and 39,150 acres of pinyon/juniper woodland would have much the same effect as discussed for livestock grazing management treatments. Most mountain shrub treatments would occur in late-seral communities, and treatments would not change the ecological site classification of the community. It is expected that 6,700 acres of treated sagebrush communities would improve to late-seral plant communities because of treatment. The remaining 2,240 acres treated would remain in the mid-seral community. It is expected that of the 39,150 acres of pinyon/juniper treated, 60 percent would occur within mid-seral communities and would remain in mid seral after treatment.

Alternative B

Changing forage allocations for deer and antelope would result in the same impacts to plant communities as described for Alternative A.

Increasing the forage allocation for elk from 5,004 AUMs to 15,105 AUMs would likely support most of the increased elk forage needs. However, there an a few areas in which concentrated use is occurring and conflicting with forage allocations for livestock grazing use. These conflict areas are in the Blue Mountain GRA, the Pinyon Ridge area of Wolf Ridge/Red Wash and Danforth/Jensen GRAs and the deer winter ranges for Piceance GRA. Sufficient data are not available to determine the impact of the increase elk forage allocation.

Treating fewer acres for habitat improvements would result in the same impacts as described for Alternative A. Pinyon-juniper treatments would occur on 4,000 acres. It is estimated that 2,400 acres of mid-seral pinyon-juniper woodlands would be treated with no change in classification. About 400 acres of PNC and 1,200 acres of late-seral woodlands would be treated with a mid-seral woodland community resulting after treatment.

Treating 23,000 acres of late-seral mountain shrub communities would result in those communities remaining in that classification following treatment. Treating 4,500 acres of mid-seral sagebrush would improve those communities to a late-seral sagebrush community.

Alternative C

Increasing forage allocation for elk from 5,004 AUMs to 10,853 AUMs would result in the same impacts on plant communities as described for Alternative A. The forage production improvements expected in alternative A would also occur under this alternative and would likely support most of the increased elk forage needs.

Treating 2,400 acres of mid-seral pinyon-juniper woodlands (with no change in classification), about 400 acres of PNC, and 1,200 acres of late-seral woodlands (with a mid-seral woodland community resulting after treatment) would result in the same plant community impacts as described for Alternative A.

Treating 23,000 acres of late-seral mountain shrub communities would result in no change in classification, and treating 4,500 acres of mid-seral sagebrush would improve those communities to late-seral.

Alternative D

Impacts from forage allocations to deer and antelope would be the same as described under Alternative A. Increasing forage allocation for elk from 5,004 AUMs to 10,853 AUMs would result in the same impacts on plant communities as described for Alternative A. The forage production improvements expected under Alternative A would also occur under this alternative and would likely support most of the increased elk forage needs.

Treating 2,400 acres of mid-seral pinyon-juniper woodlands (with no change in classification), about 400 acres of PNC, and 1,200 acres of late-seral woodlands (with a mid-seral woodland community resulting after treatment) would result in the same plant community impacts as described for Alternative A.

Treating 23,000 acres of late-seral mountain shrub communities would result in no change in classification, and treating 4,500 acres of mid-seral sagebrush would improve those communities to late-seral.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

All Alternatives

Continuing to manage prairie dogs for desired black-footed ferret habitat would maintain an early-seral plant community on an estimated 13,000 acres (20 percent) of sagebrush and/or saltbush shrublands within the 64,690 acres of active prairie dog colonies.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Continuing off-road motorized vehicle travel on plant communities with the greatest forage production for wildlife and livestock (the grassland and shrubland communities), and travel during wet soil conditions, would destroy vegetative cover, resulting in soil loss, soil compaction and a decrease in vegetation production.

Travelling off-road during big game hunting seasons, when soil conditions are usually wet sometime during the season, and creating new trails that receive repeated use each year, would cause permanent disturbance resulting in a long-term loss of vegetation production. Vegetation production is also decreased on undisturbed soils adjacent to trails devoid of vegetation. Runoff, which is normally slowed by vegetation and infiltrates soils on site, is lost as water is channeled away from the site by both roads and trails. Long-term loss of vegetation production from both the trail and the adjacent undisturbed soils occurs as a result of the newly-created trails.

Alternative B

No impacts

Alternative C

Closing 908,530 acres to motorized vehicle travel and restricting travel on the remainder of the resource area to designated roads and trails would protect plant communities from excessive damage such as vegetation loss, decreased production, and soil compaction and loss.

Preventing off-site impacts from the invasion of non-native noxious weeds onto disturbed roads and trails would be a significant improvement in protecting ecological site classifications for adjacent plant communities.

Designating Coal Oil Basin open for motorized vehicle travel use with little restriction would create a long-term destruction of native vegetation from disturbed areas. This is one of the harshest environments in the resource area, with low precipitation, alkaline soils and competition from introduced exotic annual plants, making it extremely difficult to reestablish the native vegetation on disturbed areas. Wildlife and livestock forage production from native

perennial plants would be lost with destruction of native vegetation.

Alternative D

Closing 117,230 acres to motorized vehicle travel and restricting travel on the remainder of the resource area to designated roads and trails would protect plant communities from excessive damage such as vegetation loss and decreased production, and soil compaction and loss.

Preventing off-site impacts from the invasion of non-native noxious weeds onto disturbed roads and trails would be a significant improvement in protecting ecological site classifications for adjacent plant communities.

Designating Coal Oil Basin open for motorized vehicle travel with little restriction would create a long-term destruction of native vegetation from disturbed areas. This is one of the harshest environments in the resource area, with low precipitation, alkaline soils and competition from introduced exotic annual plants, making it extremely difficult to reestablish the native vegetation on disturbed areas. Wildlife and livestock forage production from native perennial plants would be lost with destruction of native vegetation.

IMPACTS FROM FIRE MANAGEMENT

All Alternatives

Continuing to suppress natural fire events would prevent the development of fire-dependent or fire-maintained plant communities. Many grassland communities have converted to sagebrush shrublands or pinyon/juniper woodlands for lack of recurring natural fires. Without fire, shrublands have become decadent and are converting to monocultures consisting principally of shrubs, having lost important species diversity offered by herbaceous plant species. The desired plant species diversity expected from fire would not be achieved on fire dependent-plant communities protected from fire.

CUMULATIVE IMPACTS ON PLANT COMMUNITIES

Alternative A

Table 4-9 represents a summary of the changes in ecological site classifications expected to occur from management actions proposed in this alternative.

Table 4-9. Changes in Ecological Site Classification

Seral Phase	BLM Land Acres				Naval Oil Shale			
	Existing	%	Future	%	Existing	%	Future	%
PNC	131,800	9	212,050	15	0	0	1,210	30
Late-seral communities	498,580	34	616,490	42	2,930	73	2,180	55
Mid-seral communities	585,510	40	399,270	28	930	23	470	11
Early-seral communities	108,440	8	96,520	7	0	0	0	0
Not classified	131,540	9	131,540	9	140	4	140	4
Total	1,455,870	100	1,455,870	100	4,000	100	4,000	100

Use of non-native plant species in revegetating disturbed plant communities could impact about 74,000 acres of BLM land. An estimated 43,530 acres of BLM land have had non-native reclamation plant species established as a result of past management practices. A cumulative total of 120,560 acres of BLM land or 8.3 percent would be impacted by use of non-native plant species.

Long-term loss of vegetation production would occur from development and maintenance of facilities devoid of vegetation, such as roads, well pads and livestock watering areas on approximately 8,020 acres. It is estimated that a cumulative total of about 11,000,000 pounds of annual forage production would be lost. About one-half of this would be available for use by grazing animals with a cumulative loss of about 5,700 AUMs of forage availability.

Alternative B

Table 4-10 represents a summary of the changes in ecological site classifications expected to occur from management actions proposed in this alternative.

Table 4-10. Changes in Ecological Site Classification (Alternative B)

Seral Phase	BLM Land Acres				Naval Oil Shale			
	Existing	%	Future	%	Existing	%	Future	%
PNC	131,800	9	215,900	15	0	0	1,210	30
Late-seral communities	498,580	34	628,060	43	2,930	73	2,180	55
Mid-seral communities	585,510	40	383,840	26	930	23	470	11
Early-seral communities	108,440	8	96,520	7	0	0	0	0
Not classified	131,540	9	131,540	9	140	4	140	4
Total	1,455,870	100	1,455,860	100	4,000	100	4,000	100

On BLM land acres, PNCs would increase by 3,860 acres, late seral communities by 11,570 acres, and mid-seral communities would decrease by 15,430 acres from those acres expected under Alternative A.

Use of non-native plant species in revegetating disturbed plant communities could impact about 59,310 acres of BLM land. This represents a 14,700-acre decrease from Alternative A and is a major difference between alternatives. An estimated 43,530 acres of BLM land has had non-native reclamation plant species established as a result of past management practices. A cumulative total of 102,830 acres of BLM land on 7 percent would be impacted by use of non-native plant species. The significance of the impact would relate to the success of establishing desirable vegetation cover on the 59,310 acres to be impacted under this alternative.

Long-term loss of vegetation production would occur from development and maintenance of facilities devoid of vegetation, such as roads, well pads and livestock watering areas. It is estimated that 12,330 acres of BLM land have been taken out of vegetation production because of past management actions. An additional 16,500 acres would be taken out of vegetation production because of management actions proposed. It is estimated that a cumulative total of about 23,000,000 pounds of annual forage production would be lost from BLM lands. About one-half of this would be available for use by grazing animals. A cumulative loss of about 11,500 AUMs of annual forage availability would be lost. If allocated to livestock use, this could be sufficient forage for a yearlong cattle operation of 960 cows.

Alternative C

The percentage of each plant community that would be or not be impacted by use of non-native plant species would not change from those acres given for Cumulative Impacts, Alternative B.

Table 4-11 represents a summary of the changes in ecological site classifications expected to occur from management actions proposed in this alternative.

Table 4-11. Changes in Ecological Site Classification (Alternative C)

Seral Phase	BLM Land Acres				Naval Oil Shale			
	Existing	%	Future	%	Existing	%	Future	%
PNC	131,800	9	217,090	15	0	0	1,210	30
Late-seral community	498,580	34	631,630	43	2,930	73	2,180	55
Mid-seral community	585,510	40	379,090	26	930	23	470	11
Early-seral community	108,440	8	96,520	7	0	0	0	0
Not classified	131,540	9	131,540	9	140	140	140	4

Table 4-11 continued

Seral Phase	BLM Land Acres				Naval Oil Shale			
	Existing	%	Future	%	Existing	%	Future	%
Total	1,455,870	100	1,455,870	100	4,000	100	4,000	100

On BLM land, PNCs would increase by 5,050 acres, late-seral communities would increase by 15,140 acres, and mid-seral community acreage would decrease by 20,180 acres from those expected under Alternative A.

Impacts from the use of non-native plant species in revegetating disturbed plant communities and the cumulative total, by major plant community, that would be impacted or not remain unchanged from that presented in Cumulative Impacts, Alternative B.

Impacts from the long-term loss of vegetation production, resulting from development and maintenance of facilities devoid of vegetation, would be the same as described for Alternative B.

Alternative D

Table 4-12 represents a summary of the changes in ecological site classifications expected to occur from management actions proposed in this alternative.

Table 4-12. Changes in Ecological Site Classification (Alternative D)

Seral Phase	BLM Land Acres				Naval Oil Shale			
	Existing	%	Future	%	Existing	%	Future	%
PNC	131,800	9	217,090	15	0	0	1,210	30
Late-seral community	498,580	34	631,630	43	2,930	73	2,180	55
Mid-seral community	585,510	40	379,090	26	930	23	470	11
Early-seral community	108,440	8	96,520	7	0	0	0	0
Not classified	131,540	9	131,540	9	140	4	140	4
Total	1,455,870	100	1,455,870	100	4,000	100	4,000	100

On BLM land, PNCs would increase by 5,050 acres, late-seral communities would increase by 15,140 acres, and mid-seral community acreage would decrease by 20,180 acres from those expected under Alternative A.

Impacts from the use of non-native plant species in revegetating disturbed plant communities and the cumulative total, by major plant community, that would be impacted or not remains unchanged from that presented in Cumulative Impacts, Alternative B.

Impacts from the long-term loss of vegetation production, resulting from development and maintenance of facilities devoid of vegetation, would be the same as described for Alternative B.

IMPACTS ON NOXIOUS AND PROBLEM WEEDS MANAGEMENT

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Noxious plant species infestations would occur in direct proportion to their rate of spread and degree of infestation. The rate of spread, under each alternative, would largely depend upon the number of acres of land disturbed (see Cumulative Impacts on Noxious and Problem Weeds). Severe infestations would be irreversible, and the loss of vegetation production would be irretrievable. Weed infestations would reduce rangeland productivity and diminish recreation and aesthetic values. Weed-infestations would affect biodiversity and the health of the ecosystem and affect the economy of all users. The economic loss of those users would far exceed the cost of a well-planned, fully-funded, integrated noxious weed program.

Alternatives A and B

Continuing the existing management of noxious and problem weeds would result in a 3 percent per year increase in noxious weed infestations and an 8 percent per year increase in leafy spurge.

Alternatives C and D

Designating five areas as weed-free zones and enforcing stipulations to prevent introduction of spread of noxious weeds would decrease the rate of spread by an undetermined amount.

IMPACTS FROM OIL AND GAS, OIL SHALE, COAL, LOCATABLE MINERALS, MINERAL MATERIALS, TIMBER LANDS WOODLANDS, WILDLIFE, AND LIVESTOCK MANAGEMENT, AND LAND USE AUTHORIZATIONS

All Alternatives

Any disturbance that provides a site suitable for noxious weed establishment would initiate a cycle which, if not interrupted by constructive management, would degrade individual plant communities and contribute to the spread of noxious weeds. Ultimately, entire ecosystems would and would be compromised.

The number of acres subject to disturbance would vary by alternative. Chapter 2, Plant Communities Section, lists the number of acres, by alternative and vegetation type, that would be disturbed by oil and gas development, coal development, timber and woodland harvest, and livestock and wildlife vegetation manipulations. Motorized vehicles used in the maintenance of facilities would have the greatest potential for infestation over the long term. Two-thirds of this potentially infested area could be expected to be in the Douglas/Cathedral GRA and another 20 percent in the Piceance Basin GRA. Proper revegetation and application of preventative and remedial noxious weed management measures could reduce this potentially infested area by 90 percent, bringing total acres affected to 970.

Surface stipulations, especially NSO, proposed by the various resources would decrease but not prevent the spread of noxious weeds by reducing the amount of land subject to surface-disturbing activities. The number of acres subject to no lease and NSO stipulations are listed in the Cumulative Impacts on Noxious and Problem Weeds Section.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Continuing to allow off-road motorized vehicle travel would continue to maintain the great potential for the proliferation of noxious weed infestations. Off-road vehicle use would cause permanent disturbance, resulting in a long-term loss of vegetation production and increase in potential for noxious weed infestations.

Alternative B

Restricting motorized vehicle travel to existing roads and trails would reduce the potential spread of noxious and problem weeds into off-road areas. The potential for infestation on and adjacent to existing roads and trails would remain the same. Impacts would be mitigated by restricting motor vehicle use to designated roads and trails in the grassland, greasewood, saltbush and sagebrush plant communities.

Alternatives C and D

Closing 908,530 acres under Alternative C and 117,230 acres under Alternative D to motorized vehicle travel and restricting travel on the remainder of the resource area to designated roads and trails would protect vegetation from excessive damage and thereby decrease weed infestations. Restricting motorized vehicle use to designated roads and trails would reduce the rate and extent of disturbance created by promiscuous off-road vehicle use. Enforcement of this restriction would reduce the likelihood of noxious weed establishment and infestation.

IMPACTS FROM ACCESS MANAGEMENT

All Alternatives

Acquiring access to 17 areas, 21 areas, 24 areas, and 38 areas, respectively, under Alternatives A, B, C, and D would increase the potential for noxious and problem weed introduction and long-term infestation.

CUMULATIVE IMPACTS ON NOXIOUS AND PROBLEM WEEDS

All Alternatives

Noxious plant species infestations would occur in direct proportion to their rate of spread and degree of infestation. The rate of spread, under each alternative, would largely depend upon the number of acres of land disturbed. Severe infestations would reduce rangeland productivity and diminish recreation and aesthetic values. Weed infestations would affect biodiversity and the health of the ecosystem, and affect the economics of all users. The economic losses of those users would far exceed the cost of a well-planned, fully-funded, integrated noxious weed program.

IMPACTS ON RIPARIAN MANAGEMENT

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Continuing to manage at the proposed level would not meet the overall objective of having 75 percent of the BLM land riparian habitats in proper functioning condition. An estimated 85 percent of the BLM land riparian habitats would remain in a stable condition. However, 50 to 75 percent of these habitats would not have sufficient vegetation cover to allow them to trap sediment and water which is necessary for improvement in habitat conditions.

Alternatives B, C, and D

Implementing the objectives of this alternative would result in improved conditions on about 170 acres of riparian habitat and about 980 acres of wetlands. Within 10 years, 1,630 acres of riparian and wetland habitats would be in proper functioning condition. Only 540 acres would remain in improper functioning condition.

IMPACTS FROM SOILS AND SURFACE WATER MANAGEMENT

All Alternatives

Decreasing runoff and erosion under the proposed management for soils and surface water would help stabilize riparian habitats.

IMPACTS FROM OIL AND GAS, OIL SHALE, SODIUM, COAL, MINERAL MATERIALS, LOCATABLE MINERALS, AND LAND USE AUTHORIZATIONS MANAGEMENT

All Alternatives

Continuing to develop minerals and authorizing land use within these critical areas would be avoided by use of CSU stipulations. Disturbances within the watershed could have

an impact on riparian/wetland habitats from increased siltation and increased runoff coming from disturbed sites such as roads. These impacts would be minor because of the stipulations applied during development would require avoidance of sensitive areas.

IMPACTS FROM LIVESTOCK GRAZING, WILD HORSE, AND BIG GAME MANAGEMENT

All Alternatives

Livestock grazing, wild horse and big game impacts to riparian vegetation are adequately addressed in the *White River Resource Area Grazing Management Final Environmental Impact Statement* - 1981.

CUMULATIVE IMPACTS ON RIPARIAN MANAGEMENT

Alternative A

Continuing to manage riparian areas under these objectives and subject to these impacts would result in 50 to 75 percent of habitats not having sufficient vegetation cover to function properly. An estimated 85 percent of the BLM land riparian habitats would remain in stable condition.

Alternatives B, C, and D

Under this alternative, improved conditions would occur on 53 percent of the riparian habitats within the planning area. Approximately 75 percent of all BLM land riparian habitats would be in a proper functioning condition.

IMPACTS ON T/E SPECIES AND SPECIAL STATUS PLANTS MANAGEMENT

IMPACTS FROM THREATENED/ENDANGERED AND SPECIAL STATUS PLANT, AREAS OF CRITICAL ENVIRONMENTAL CONCERN, AND WITHDRAWALS MANAGEMENT

Continuing ACEC designation on three areas (Dudley Bluffs - 1,630 acres, Yanks Gulch/Upper Greasewood - 2,680 acres, Raven Ridge - 2,090 acres) where known populations and potential habitat of T/E and special status plants occurs would place priority management on 6,600 acres of known and potential habitat for T/E and special status plant species. ACEC designation would flag these areas for special management which would restrict motorized travel to designated roads and trails within ACECs and ensure greater protection for T/E species and special status plants by limiting or prohibiting activities such as public utilities, new roads, and rangeland improvements.

Alternative A

Not designating an additional three areas as ACECs (Duck Creek - 3,430 acres, Raven Ridge - 2,890 acres and Ryan Gulch - 1,440 acres) where known T/E populations and potential habitat occur would not provide priority management offered by ACEC designation.

Designating known T/E and special status plant populations (1,440 acres) as NSO areas for oil and gas leasing would make this acreage unavailable for placement of oil and gas facilities. The 45,400 acres of potential habitat for T/E species would have to be surveyed for T/E and special status plants prior to authorizing any surface-disturbing activities. Surface-disturbing activities would have to avoid these plants.

Keeping the oil shale withdrawal in the Piceance Geographic Reference Area (GRA) would prevent the staking of mining claims on 360 acres of known populations and 43,680 acres of potential habitat. About 1,080 acres of known populations and 1,350 acres of potential habitat outside the oil shale withdrawal (Wolf Creek/Red Wash GRA) would not be protected from locatable mineral claims.

Alternative B

Not designating an additional three additional areas as ACECs (Duck Creek - 3,430 acres, Raven Ridge - 2,890 acres and Ryan Gulch - 1,440 acres) where known T/E populations and potential habitat occur would not provide the priority management offered by ACEC designation.

Designating known T/E and special status plant populations (1,440 acres) and potential habitat (45,400 acres) as NSO areas, would ensure NSO stipulations are placed on all surface-disturbing permits, including oil and gas leases, issued in these areas (46,840 acres total).

Revoking the oil shale withdrawal would make all of the known plant populations (1,440 acres) and potential habitat (45,400 acres) open to locatable mineral entry. However, withdrawing all known and potential T/E habitat from locatable mineral entry would prohibit mineral entry within the revoked oil shale withdrawal area and the 1,080 acres of known habitat and 1,350 acres of potential habitat outside the existing oil shale withdrawal area. The potential impacts to these species from mineral entry would be eliminated under this alternative by withdrawal of known and potential habitat.

Alternatives C and D

Impacts would the same as described under Alternative B except that an additional three areas where known populations and potential habitat occur would be designated as ACECs.

Designating an additional three areas as ACECs for T/E and special status plants would provide priority management on an additional 7,760 acres. This acreage, together with the 6,600 acres of existing ACECs would protect 14,360 acres where known populations and potential habitats occur. This acreage encompasses almost all known populations of T/E and special status plant species within the resource area. Providing priority management for all the major known populations of these species would help ensure continued and long-term survival of these species. ACEC designation is considered a priority in the recovery plan for the two listed species that occur in these areas and could lead to delisting of one or both species.

IMPACTS FROM OIL AND GAS AND MINERAL MATERIALS MANAGEMENT

Alternative A

Attaching NSO stipulations on all oil and gas leases issued in known populations of T/E and candidate plants (1,440 acres) would make all known populations unavailable for oil and gas surface occupancy.

Attaching a CSU stipulation on the existing Dudley Bluffs and Yanks Gulch/Upper Greasewood ACECs (4,310 acres) would allow oil and surface occupancy in areas were no plants are found as a result of T/E surveys.
This would leave 41,090 acres of potential habitat available for oil and gas leasing without NSO or CSU stipulations for T/E species. Destruction and loss of any population of T/E and special status plant species would jeopardize the survival of the species present in these locations. The two species most likely to be impacted by oil and gas development are *Physaria obcordata* and *Lesquerella congesta,* both federally-listed threatened species. The only known locations for these species are within a 200-square mile area with high oil and gas development potential. These species are restricted to small populations on small acreage which could be subjected to off lease impacts which could eliminate a small population.

Alternatives B, C, and D

Attaching an NSO stipulation on all leases and surface-disturbing activities within known populations and potential T/E plant habitat (46,840 acres - all within areas of high potential for oil and gas development) would prohibit surface-disturbing activities in those areas unless the stipulation were exempted by the area manager through environmental analysis. This NSO exemption would be applicable to potential habitat inventoried and found to have no T/E plants.

IMPACTS FROM OIL SHALE AND SODIUM MANAGEMENT

All Alternatives

Oil shale and sodium development would have the potential of impacting two federal threatened plant species, *Physaria obcordata* (PHOB) and *Lesquerella congesta* (LECO). The areas identified for surface and underground development of

oil shale, sodium development and multiminerals development encompass all but one population of both threatened plant species. A majority (90 percent) of the potential habitat for both species also occurs within this development area. The potential for impact to both species from oil shale development is high.

Direct impacts to known populations and potential habitat of both species from oil shale development would be addressed in separate environmental analysis on any specific proposal with appropriate mitigation. Indirect impacts to these species from oil shale development would be the same as for oil and gas development as discussed above.

IMPACTS FROM PLANT COMMUNITIES AND NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Manipulating vegetation and controlling weeds with herbicides could destroy T/E plant species if herbicides drift from treatment areas onto T/E plants. The greatest potential for adverse impact is from weed control along roads and rights-of-way as several known populations are close to roads or rights-of-way. Conversely, not controlling the invasion of noxious weed species could adversely impact T/E plants from competition for habitat.

IMPACTS FROM WOODLANDS, RECREATION, AND MOTORIZED VEHICLE MANAGEMENT

Alternative A

Continuing to allow motorized vehicles to travel off existing roads and trails to gather firewood, hunt, and pursue other activities could destroy individual T/E and special status plant species. Increased frequency of motorized vehicles traveling off roads and trails use could impact soil conditions and thus the suitability of the site to continue to support T/E plants.

Off-highway vehicle use associated with big game hunting and firewood gathering has steadily increased. Under this alternative, the only T/E plant species habitat closed to motorized vehicle travel is within the Dudley Bluffs, Raven Ridge, and Yank's Gulch ACECs. All remaining T/E plant habitat would be open to motorized vehicle travel.

Alternatives B, C, and D

Restricting motorized vehicle travel to existing roads and trails (Alternative B) and designated roads and trails (Alternatives C and D) would protect T/E plant species from off-road vehicle disturbance associated with firewood harvest, post/pole harvest, hunting, and other activities.

Designating roads and trails for motorized vehicle use under Alternative D would result in closing existing roads and trails that cross two populations of *Lesquerella congesta*. Closing these two-track 4-wheel drive roads branching off Duck Creek Road and Ryan Gulch Road would provide previously-disturbed habitat for plants to recolonize.

IMPACTS FROM LIVESTOCK GRAZING AND WILD HORSE MANAGEMENT

All Alternatives

Grazing by livestock and wild horses would not affect T/E plants because these species are not palatable. Also use of the habitat occurs after the growing season when the plants are dormant. Developing livestock control facilities or watering locations could impact T/E plants either from surface disturbance during facilities development or from livestock trampling resulting from development of facilities or waters which concentrate livestock presence in T/E species habitats.

Implementing the proposed wild horse management would remove 95 percent of the T/E plant species habitat in Piceance GRA. The numbers of horses proposed for the Piceance Basin/East Douglas HMA should keep horse numbers at a level at which trampling damage would be insignificant; however, loss of individual plant species would continue to occur.

IMPACTS FROM BIG GAME MANAGEMENT

All Alternatives

Continuing pronghorn grazing use of the White River *Penstemon* and the *Graham's Penstemon* on Raven Ridge

does impact the vigor and reproduction of both plant species. Pronghorn numbers have increased as has their frequency along the west and south sides of Raven Ridge, and they are the primary grazing users of both plant species. Grazing use occurs during the growing season and is keeping both plant species from producing sufficient seed for reproduction. Decreasing pronghorn numbers on Raven Ridge would benefit both plant species by the decrease in grazing use.

Wildlife habitat improvement projects and increased wildlife numbers could impact T/E plants from surface disturbance and from increasing the density and frequency of wildlife presence or changing the period wildlife are present on T/E plant habitats.

IMPACTS FROM LAND USE AUTHORIZATIONS MANAGEMENT

All Alternatives

Maintaining roads on several existing land use authorizations could impact both threatened plant species by destroying individual plants but would not affect populations adjacent to the roads. The plant *Physaria obcordata* occurs within the disturbance and borrow ditches of the Calamity Ridge Road (Rio Blanco County Road 24X) and the Piceance Creek Road (Rio Blanco County Road 5). Broadcast applications of herbicides for control of weeds and brush within the right-of-way could destroy the small populations adjacent to the roads from drift of herbicides.

The plant *Lesquerella congesta* is adjacent to the Duck Creek road (Rio Blanco County Road 20) and could be impacted the same as discussed for *Physaria obcordata*.

Placing utilities within several mile-wide corridors could impact the two threatened plant species. The Highway 64-Ryan Gulch corridor could impact both *Physaria obcordata* and *Lesquerella congesta* within the Ryan Gulch portion of the corridor. The Price Creek-Greasewood corridor could impact *Physaria* within the corridor near Piceance Creek. The Park Canyon to Magnolia corridor could impact both species within the corridor near Piceance Creek. Specific proposals to place utilities within these corridors would have to address impacts to these species through separate environmental analysis.

IMPACTS FROM LAND OWNERSHIP ADJUSTMENTS MANAGEMENT

Alternatives A, B, and D

Known populations of T/E and special status plants would be identified for retention not subject to disposal. However, potential habitat could become available for disposal as it would be classified as category 2, lands available for disposal by means other than sale. The impacts of any specific disposal proposal would be subject to further environmental analysis which could require an inventory for T/E or special status plants on potential habitat. Any populations discovered by inventory would not be subject to disposal as they would become lands identified for retention (category 3 lands).

Alternative C

No impacts.

IMPACTS FROM FIRE MANAGEMENT

All Alternatives

Fire suppression activities could impact T/E plants or their habitat. Their habitats are usually natural fire barriers and may be used to tie in firelines created during suppression activities. Individual plants and their habitat could be destroyed as a result.

CUMULATIVE IMPACTS ON T/E PLANTS

All Alternatives

NSO and CSU stipulations to protect known populations and potential habitat of T/E and special status species would be applied to surface-disturbing activities. Predisturbance inventories required prior to issuing permits for surface-disturbing activities would locate all populations within a proposed area and protect them by requiring avoidance of the plants.

Accidental loss of some plant species could occur from off-road operation of motorized vehicles and equipment. Most of this use is associated with recreational pursuits on BLM lands. This use is expected to increase above historic levels and has a potential of destroying some populations of T/E

and special status plants. The extent of loss cannot be assessed with current data.

The most significant threat to the two federally-listed plant species in Piceance GRA is from mineral development. All the known habitat for both species lies within or is immediately adjacent to the area with greatest potential for development of oil shale, sodium and multimineral resources. The area is also high potential for oil and gas development. Known and discovered populations of these plants would be protected from any direct loss resulting from surface disturbance of known habitats. However, indirect impacts from mineral development has the potential to impact and could destroy some populations of these species. Because of the extremely limited distribution of these species, it could be possible to threaten the survival of either or both species. These species are located nowhere else in the world. A significant loss of either species could result in its eventual extinction.

IMPACTS ON SENSITIVE PLANTS AND REMNANT VEGETATION ASSOCIATIONS (RVAs) MANAGEMENT

IMPACTS FROM SENSITIVE PLANTS AND RVA MANAGEMENT

All Alternatives

Designating 895 acres of sensitive plants and 3,625 acres of remnant vegetation associations (RVAs) (4,520 acres total) as NSO would make this acreage unavailable for placement of oil and gas facilities, subject to valid existing rights, unless the stipulation were exempted through environmental analysis. Of the 4,520 acres protected by NSO, 1,950 acres (670 acres of sensitive plants and 1,280 acres of RVAs) occur within six designated ACECs. Prohibiting surface-disturbing activities within the RVAs would protect the RVAs. However, NSO stipulations would be subject to valid existing rights.

Alternative A

Not designating 895 acres of sensitive plants and 3,625 acres of RVAs (4,520 acres total) as NSO for all surface-disturbing activities would result in the NSO stipulation not being placed on all permits. This acreage would be available for surface-disturbing activities other than oil and gas.

Alternatives B, C, and D

Designating 4,520 acres of sensitive plant species and RVAs as NSO for all surface-disturbing activities would make this acreage unavailable for surface disturbance, subject to valid existing rights, unless the stipulation were exempted through environmental analysis.

IMPACTS FROM OIL AND GAS, OIL SHALE, SODIUM, MINERAL MATERIALS, LOCATABLE MINERALS, AND LAND USE AUTHORIZATIONS MANAGEMENT

All Alternatives

Applying NSO stipulations on new oil and gas leases within known populations of sensitive plants and RVAs (4,520 acres) would make those areas unavailable for placement of oil and gas surface facilities. However, because an unknown number of leases have been issued in these areas without NSO stipulations, an unknown number of acres within the leases would be subject to surface-disturbance. Conditions of approval developed through the environmental analysis process could mitigate some losses caused by development. The important element(s) of the site would be lost, but conditions of approval could require companies to reseed disturbed areas with the same plants as lost through disturbance. Impacts would be the same for mineral materials, locatable minerals, and land use authorizations.

Indirect impacts from development of all minerals could affect sensitive plant species and RVAs. Disturbances within or near habitats for sensitive plants or RVAs could subject these species to (1) introduction of plant species that would compete with desired species for available habitat, (2) deterioration of localized air quality from dust or other substances which could adversely impact desired plant species, and (3) destruction of individual plants or populations from accidental application of herbicides or other toxic chemicals associated with oil and gas development.

IMPACTS FROM PLANT COMMUNITIES AND NOXIOUS WEEDS MANAGEMENT

Alternatives A and B

Manipulating vegetation and implementing weed control projects that use herbicides could destroy sensitive plant species if herbicides drift from the treatment area. Conversely, invasion of noxious weeds into sensitive plant habitats or RVAs could create a loss of important plant species. Specific treatment proposals would be subject to separate environmental analysis before treatment.

Alternatives C and D

Controlling the spread of noxious weeds in the "weed free" zones of Blue Mountain, Calamity Ridge, and Piceance North Slope would ensure protection of numerous RVAs from invasion of noxious weeds.

IMPACTS FROM TIMBER, WOODLANDS, RECREATION, AND MOTORIZED VEHICLE MANAGEMENT

Alternative A

Continuing to allow motorized vehicle to drive off existing roads and trails on upland plant communities to gather firewood, to hunt and to pursue other activities could destroy sensitive plants and RVAs.

The extensive recreation management areas would disperse recreational activities and facilities within RVAs associated with riparian vegetation on BLM lands along the White River. These activities destroy species important to the RVA plant community.

Alternatives B, C, and D

Restricting motorized vehicle travel to existing roads and trails (Alternative B) and designated roads and trails (Alternatives C and D) would reduce impacts to sensitive plants and RVAs and enhance ACEC values.

IMPACTS FROM LIVESTOCK GRAZING AND WILD HORSE MANAGEMENT

Alternatives A, B, and D

Developing livestock control facilities or watering locations could impact sensitive plants or RVAs through redistributing or concentrating livestock onto habitats in higher densities than present levels. Likewise, changing the kind of livestock or the period of use could increase the palatability of important plant species for livestock. Increased grazing use levels which would decrease the vigor and reproduction of important plant species could create decreases or losses of these important plant species.

Removing all wild horses from known sensitive plant habitats and remnant vegetation associations would decrease impacts to important plant species and RVAs.

Alternative C

Implementing proposed management would not remove all wild horses from known sensitive plant habitats and RVAs and horses would continue to use several RVAs in the North Piceance herd area. Historical horse numbers have been reduced in both herd areas. The number of horses proposed for these herd areas could be compatible with maintaining the condition of the RVAs. All grazing use would be monitored in the RVAs to ensure the proposed horse numbers are compatible.

IMPACTS FROM BIG GAME MANAGEMENT

Alternative A

Continuing to maintain increased elk numbers could impact some of the RVAs in some geographical reference areas (elk population increases in the Blue Mountain and Piceance GRAs could impact some RVAs). Growing-season grazing use by elk, if concentrated, could decrease herbaceous species composition in the plant association, thus decreasing the importance of the RVA. Implementing habitat improvement projects could impact some sensitive plant populations or RVAs if they increase wildlife densities or change the period of occupation.

Alternatives B, C, and D

Impacts from increased elk numbers would be the same as described for Alternative A. Decreasing forage allocations for mule deer would maintain deer populations close to present numbers which would be compatible with protection and conservation of sensitive plants and RVAs.

IMPACTS FROM AREAS OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT

All Alternatives

Priority management within designated ACECs would help protect sensitive plants and RVAs. The number of acres protected by ACEC management varies by alternative: Alternative A - six ACECs (8,740 acres); Alternative B - nine ACECs (9,700 acres); Alternative C - 13 ACECs (48,130 acres).

IMPACTS FROM LAND OWNERSHIP ADJUSTMENTS MANAGEMENT

Alternatives A and B

Proposing Category 2 lands for disposal would be subject to further environmental analysis which could require an inventory for T/E or special status plants on potential habitat. Any populations discovered by inventory would not be subject to disposal as they would become lands identified for retention (category 3 lands).

Alternatives C and D

Acquiring non-Federally owned habitats for sensitive plants or RVAs within or adjacent to the proposed ACECs would provide protection of important vegetation resources.

IMPACTS FROM WITHDRAWALS MANAGEMENT

Alternatives A, C, and D

Continuing the oil shale withdrawal in the Piceance GRA would prohibit mineral entry on 890 acres of sensitive plant habitat and 3,620 acres of RVAs.

Alternative B

Revoking the oil shale withdrawal in the Piceance GRA would leave 890 acres of sensitive plant habitat and 3,620 acres of RVAs open for locatable mineral development.

IMPACTS FROM FIRE MANAGEMENT

All Alternatives

Fire suppression actions which use habitats for sensitive plants could impact the plants or their habitat. Fire suppression activities could create enough disturbance in the RVA to impact the ability of the plant communities to replicate.

CUMULATIVE IMPACTS ON SENSITIVE PLANTS AND REMNANT VEGETATION ASSOCIATIONS MANAGEMENT

All Alternatives

The quality and quantity of sensitive plants and RVAs would be maintained. Accidental loss could occur due to any form of land use and resource disturbance. Loss of some habitat could occur through the exercise of valid existing rights.

Accidental loss of some plant species could occur from off-road operation of motorized vehicles and equipment. Most of this use is associated with recreational pursuits on BLM lands. This use is expected to increase above historical levels and has the potential to destroy some populations of sensitive plants. The extent of loss cannot be assessed with current data.

Some sensitive plant populations and RVAs outside designated ACECs could be lost. Sixteen of the 19 sensitive plant species would be protected within the ACECs. Not all

RVAs are represented within ACECs, with the loss of some RVAs possible from surface-disturbing activities.

Alternative B

Loss of habitat and RVAs could occur from exploration and development of locatable minerals with removal of the oil shale withdrawal.. Habitat is dispersed such that some loss of sensitive plant species would not threaten existence of any species. Some RVAs could be lost.

Alternatives C and D

Management actions proposed would protect and conserve habitat for all sensitive plant species and would protect and enhance the important plant communities represented by the RVAs. Special designations would provide priority management for almost all sensitive plant species and a majority of all RVAs.

IMPACTS ON TIMBERLANDS MANAGEMENT

IMPACTS FROM TIMBERLAND MANAGEMENT

Alternative A

Harvesting 190 acres per year over the next 100 years would result in all commercial-suitable timberlands being harvested within 4 years, all commercial timberlands within 15 years, and the remaining noncommercial timberlands within 85 years. This would result in a non-sustainable timber harvest program.

Alternative B

Focusing timber sales on those areas that are easiest to harvest would cause those areas to be over-harvested. Suitable commercial stands would be harvested within 30 years. These stands would not be sustainable under the proposed harvest.

Harvesting 10 acres per year of aspen forest, within the Wilson Creek and Piceance Basin, would be sustainable and would not adversely affect these stands.

Alternatives C and D

As a result of no timber harvest, the timberlands would be managed for the maintenance of stand structure and forest health. All timberlands would be maintained as mature old growth.

Inventorying aspen stands for condition and production capability would determine stand health and detect problems, if any. Inventory data would help determine any needed management practices, in order to prepare the required environmental analysis and perform the needed treatments. This would allow for the maintenance and enhancement of the aspen forests.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

All Alternatives

Continuing to over-graze aspen stands, by livestock and elk, could have a negative impact on the regeneration of these stands. Implementing use limits and requirements for retention of 50 percent of current annual growth would prevent livestock problems.

CUMULATIVE IMPACTS ON TIMBERLANDS MANAGEMENT

Alternative A

All commercial-suitable timberlands would be removed within four years. All commercial woodlands would be removed within 15 years. The remaining noncommercial timberlands would be harvested in 85 years. At this rate of harvest, the timber program would not be sustainable.

Alternative B

Suitable commercial stands would be harvested within 30 years. At this rate, the timber program would not be sustainable.

Alternatives C and D

Because timberlands would not be harvested and would be managed for the maintenance of stand structure and forest

health, timberlands would be maintained as mature old growth.

IMPACTS ON WOODLANDS MANAGEMENT

IMPACTS FROM WOODLANDS MANAGEMENT

Alternative A

Continuing to harvest up to 890 acres of commercial woodland per year would result in those woodlands outside the Piceance Basin being harvested within 90 years, which is not sustainable. Of that 890 acres, 30 acres/year would be harvested within the Piceance Basin. This harvest level within the Piceance woodland management area is sustainable and would maintain forest structure. Over the rest of the resource area, the analysis used to determine this harvest level did not use harvest suitability criteria, which allowed woodlands not reasonable to be harvested to be included in the harvest level. To meet the proposed harvest level, suitable sites would, over time, be over harvested.

Alternative B

Harvesting 240 acres/year within the Piceance and Douglas/Cathedral GRAs without taking suitability criteria (slope, accessibility, soils, etc.) into account, would result in suitable sites being over harvested. Commercial and suitable woodland stands would be harvested within 75 years, which is not sustainable. Fifty-four percent of the commercial/suitable stands would be under 150 years of age. Without considering suitability criteria, commercial woodlands would be sustainable at the 300 year rotation age.

Alternatives C and D

Harvesting 45 acres/year within the Piceance and Douglas/Cathedral GRAs would maintain more than 50 percent of the commercial, suitable woodland in an age class of over 300 years. This would allow maintenance of stand structure, relative to an old growth type, on approximately 80 percent of the commercial woodland within the Piceance and Douglas/Cathedral GRAs.

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Continuing to construct roads for oil and gas development would continue to increase/improve access to woodland areas and create additional opportunities for woodland product sales. Cutting woodlands for oil and gas development would make woodland products available for removal by individuals. Access and availability to this woodlands is generally good, which focuses gathering into these areas, decreasing human pressures on more remote areas.

Alternative A

Continuing to develop oil and gas at a projected rate of 1,100 wells over the next 20 years would reduce the annual allowable harvest of commercial woodlands by 9 percent in the Douglas Arch, 73 percent in the Piceance Basin, and 7 percent in the Axial and Cosa belt. Noncommercial woodlands on all units would be affected by less than 1 percent each.

Alternative B

Continuing to develop oil and gas at a projected rate of 1,100 wells over the next 20 years would reduce the annual allowable harvest of commercial woodlands by 65 percent in the Douglas Arch and 73 percent in the Piceance Basin. The Axial and Cosa belt would not be affected by commercial harvest as no harvest is proposed. Noncommercial woodlands on all units would be affected by less than 5 percent each.

Alternatives C and D

Continuing to develop oil and gas at a projected rate of 1,100 wells over the next 20 years would reduce the annual allowable harvest of commercial woodlands by 60 percent in the Douglas Arch and 16 percent in the Piceance Basin. The Axial and Cosa belt would not be affected by commercial harvest as no harvest is proposed. Noncommercial woodlands on all units would be affected by less than 5 percent each.

IMPACTS FROM SODIUM MANAGEMENT

All Alternatives

Developing sodium, according to estimates from Natek's development, would require the removal of 80 acres of commercial woodland and 250 acres of noncommercial woodland over the life of the project. Since there are no figures to indicate time frames for development, determining impacts is difficult. In the worst case, sodium development in the Piceance Basin would tie up commercial woodland harvest for 2.5 years.

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

Alternative A

Continuing to maintain grazable woodlands in high seral and mid-seral condition, and making them unavailable for harvest, would reduce the allowable cut acreage by an undetermined amount.

Alternatives B, C, and D

No impacts.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternatives A and B

Of the 24,260 acres of pinyon/juniper identified for manipulation to enhance livestock grazing, 19,080 acres (80 percent) would be on non-woodland sites being invaded by pinyon/juniper and currently manipulated areas, and 8,180 acres (20 percent would be on woodland sites.

Of the 8,180 acres of pinyon/juniper proposed for manipulation on woodland sites, 3,500 acres (30 percent) would be in commercial woodlands, and 5,180 acres would be within noncommercial woodlands. Removing 3,500 acres of commercial woodlands would reduce the commercial harvest base by 2 percent but would not reduce the annual allowable harvest because many of the manipulations would be accomplished through woodland sales and thus be counted toward the annual allowable harvest. Removing 5,180 acres of noncommercial woodlands would reduce the woodlands by 1 percent.

Alternatives C and D

Of the 27,260 acres of pinyon/juniper identified for manipulation to enhance livestock grazing, 19,080 acres (70 percent) would be located on non-woodland sites (areas that are being invaded by pinyon/juniper) currently identified as manipulation areas, and 8,180 acres (30 percent) would be located on woodland sites.

Of the 8,180 acres of pinyon/juniper proposed for manipulation on woodland sites, 570 acres would be in commercial woodlands suitable for harvest, and 7,610 acres (the remainder) would be located in noncommercial woodlands. Removing 570 acres of suitable commercial woodlands would reduce the commercial harvest base by 2 percent but would not reduce the annual allowable harvest because many of the manipulations would be accomplished through woodland sales and thus be counted toward the annual allowable harvest. Removing 7,610 acres of noncommercial woodlands would reduce the woodlands by 2 percent.

IMPACTS FROM BIG GAME MANAGEMENT

Alternative A

Of the 39,140 acres of pinyon/juniper identified for manipulation to enhance wildlife habitat, 15,560 acres would be located within commercial woodlands, and 23,480 acres would be within noncommercial woodlands. Removing 15,560 acres of commercial woodlands would reduce the harvest base by 90 percent but would not reduce the annual allowable harvest because many of the manipulations would be accomplished through woodland sales and thus be counted toward the annual allowable harvest. Removing 23,480 acres of noncommercial woodlands would reduce the woodlands by 4 percent.

Alternative B

The wildlife resource proposes to treat a maximum of 4,800 acres of pinyon/juniper over the next 20 years. Most if not all of this acreage would be incorporated/coordinated with the range resource. If the wildlife resource were to treat 4,800 acres, this in itself would not be significant,

occupying less than 1 percent of the pinyon/juniper woodlands in the resource area.

Within the pinyon/juniper type, the 60:40 forage cover ratio would be approximately a 40 percent reduction to the allowable harvest base acreage. Acreage available under Alternative B for cutting would be reduced to 88,000 acres, and 200 acres/year would be available for clearcutting.

The other implementation guidelines pertinent to woodland habitats would have an insignificant impact on the forest/woodland resource, in that by proper siting and preparation of sales, these guidelines could be met without further affecting the allowable cut.

Alternatives C and D

The wildlife resource proposes to treat a maximum of 2,000 acres of pinyon/juniper over the next 20 years. Most, if not all of this acreage would be incorporated/coordinated with the range resource. If the wildlife resource were to treat 2,000 acres, this in itself would not be significant, occupying less than 3/10 of 1 percent of the pinyon/juniper woodlands in the resource area.

Within the pinyon/juniper type, the 60:40 forage cover ratio would be approximately a 40 percent reduction to the allowable harvest base acreage. Acreage available under Alternatives C and D for cutting would be reduced to 33,120 acres with 55 acres/year available for clearcutting.

The other implementation guidelines pertinent to woodland habitats would have an insignificant impact on the forest/woodland resource, in that by proper siting and preparation of sales, these guidelines can be met without further affecting the allowable cut.

IMPACTS FROM FIRE MANAGEMENT

All Alternatives

Natural fire probably maintains woodlands at a constant overall acreage. Human interference in this natural cycle, by fire suppression, reduction of fine/ladder fuels has extended the range of these woodlands. Overall, the impacts of fire are highly debatable and cannot be considered as a loss of woodlands.

Alternative A

Continuing to convert woodland to a shrub/grass vegetation association, by burning approximately 30,000 acres of pinyon/juniper during a 20-year period would result in a loss of commercial forest base at the rate of 390 acres per year and noncommercial forest base losses of 1,100 acres per year. This is 44 percent of the yearly commercial harvest acreage. Approximately 30 percent of wood on a burned site would be salvageable. Suppressing fire and reducing fine/ladder fuels has extended the range of woodlands.

Alternative B

Converting approximately 30,000 acres of pinyon/juniper by wildfires from a woodland to a shrub/grass vegetation association would affect 130 percent of the yearly commercial harvest acreage. On an annual basis, 1,500 acres would be converted per year (4 percent of the total woodlands). Loss of commercial forest base would be 320 acres/year, and noncommercial would be 1,180 acres/year. Approximately 30 percent of wood on a burned site would be salvageable.

Alternative C and D

Converting approximately 30,000 acres of pinyon/juniper by wildfires from a woodland to a shrub/grass vegetation association would affect 130 percent of the yearly commercial harvest acreage. On an annual basis, 1,500 acres would be converted per year (4 percent of the total woodlands). Loss of commercial forest base would be 320 acres/year, and noncommercial would be 1,180 acres/year. Approximately 30 percent of wood on a burned site would be salvageable.

CUMULATIVE IMPACTS ON WOODLANDS

Alternative A

Within the Piceance Basin, overlap of wildlife, woodland harvest, and livestock management, along with the loss to oil and gas and sodium, is estimated at 7,670 acres over 20 years. On a yearly basis this is 384 acres/year. At this rate commercial woodlands would be harvested in 190 years, which is sustainable, although we would not have any commercial stands greater than 200 years of age. To achieve old growth structure in pinyon/juniper, stand age would have to be greater than 200 years.

Throughout the rest of the resource area, all proposed manipulations by livestock management and wildlife (7,830 acres/20 years) could be accomplished by the woodland harvest program. The woodland harvest program proposes to harvest 17,200 acres over 20 years. Removal of woodlands by oil and gas development is estimated at 1,600 acres over a twenty year period. At the removal rate of 18,800 acres over 20 years, commercial woodlands would be removed within 90 years. At this rate these commercial woodlands are not sustainable.

Removal/conversion within noncommercial woodlands would remove 8 percent of these woodlands within the Piceance Basin, and 5 percent within the rest of the resource area, over a 20-year period. At this rate of removal, 50 percent these woodlands would remain as old growth and these woodlands would be sustainable.

Alternative B

Over a 20-year period it is estimated that 6,920 acres of commercial woodland will be lost to harvest, vegetation manipulations and development. This is 1 percent of the total woodland base. Loss of commercial forest base is estimated at 5 percent over 20 years and is sustainable. All commercial woodlands would be harvested in approximately 400 years. Applying suitability criteria to commercial woodlands would decrease the rotation age on these woodlands (commercial) to under 75 years, which is not sustainable.

Over a 20-year period 15,570 acres of non-commercial woodlands would be lost. This is 3 percent of the non-commercial woodland base which is sustainable with a 660 year rotation age.

Alternative C

Over a 20 year period it is estimated that 1,060 acres of suitable/commercial woodland will be lost to harvest, vegetation manipulations and development. This is 1 percent of the total woodland base. Loss of suitable/commercial forest base is estimated at 4 percent over 20 years, and is sustainable. All suitable/commercial woodlands would be harvested in approximately 400 years.

Over a 20 year period 10,750 acres of non-commercial woodlands would be converted. This is 3 percent of the noncommercial woodland base which is sustainable with a 660 year rotation age.

Alternative D

Within the Piceance and Douglas/Cathedral Geographic Reference Areas, potentially 194 acres of commercial woodland would be lost to development or natural causes per year. Loss by fire and other development is estimated at 149 acres per year, which is 3 times the woodland allowable harvest level. Loss of woodland by fire, livestock, wildlife and oil and gas is sustainable within the commercial forest base by maintaining a rotation age of over 1,000 years. Overall, within the commercial forest, a rotation age of 800 years would be maintained. The acres of suitable commercial woodland in climax old growth condition would not drop below 70 percent at any time.

IMPACTS ON LIVESTOCK GRAZING MANAGEMENT

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

All Alternatives

Improving long-term forage production would provide an allocation to livestock grazing of 146,059 AUMs. This allocation would meet the demand for livestock forage that existed in 1980. Most long-term increases in forage production would come from the 130,520 acres of vegetation manipulations proposed.

Proposing minimum rest requirements for the 54 allotments in the "improve" category would increase the need for intensifying livestock control and management. Intensifying livestock management would create an economic impact to affected livestock operations through increased operational costs.

More detailed impacts to livestock grazing can be found in the 1980 *White River Resource Area Grazing Management Final Environmental Impact Statement* (EIS).

IMPACTS FROM SOILS AND SURFACE WATER MANAGEMENT

All Alternatives

Improving soil productivity would improve forage production and availability to livestock. Soils management may impact livestock management and distribution through limitations on development of livestock handling facilities.

Continuing to incorporate best management practices to improve water quality in non-attainment perennial streams would have some economic impact on affected livestock operations through increased operational costs.

IMPACTS FROM OIL AND GAS, OIL SHALE, SODIUM, COAL, MINERAL MATERIALS, LOCATABLE MINERALS, AND LAND USE AUTHORIZATIONS MANAGEMENT

All Alternatives

Continuing to produce oil and gas, which causes the greatest amount of surface disturbance and human presence, would destroy 17,500 acres of forage on BLM land. An estimated 2,500 of these acres would be lost in the short term until vegetation could be reestablished. The remainder (15,000 acres) would be lost in the long term. This would represent a long-term annual forage loss of 6,000 AUMs. An estimated 58 percent of this annual forage loss would come from existing livestock grazing use, decreasing livestock AUMs by 3,480. This would be sufficient forage to sustain about 290 cows year-long. As most of the allotments in this area are large, only a few allotments would be affected. However, because much of the land within the few allotments is BLM land, a loss of 3,480 AUMs spread over a relatively few allotments could threaten the survivability of those livestock operators.

Early spring forage losses from oil and gas development usually cannot be supplemented during this season and, as a result, could cause the livestock operator may have to reduce the herd size even though forage resources would be sufficient for the remainder of the year. Oil and gas development activities could impact animal distribution by interfering with the planned grazing schedules developed in an allotment management (AMP). Continuing to develop minerals could disrupt grazing schedules designed to defer grazing on a specific area for a specific period of time.

Removing forage on salt desert shrub communities would decrease winter forage for sheep in the long term because reclaiming these ranges would be difficult. These sheep operations depend on these areas for winter forage.

Developing oil and gas could increase siltation in livestock ponds, and the decreased water storage capacity could reduce or eliminate the usefulness of these improvements. Increasing activity around springs or wells could force livestock to use other water sources, and decreased water availability would directly impact distribution which, in turn, would affect rangeland condition.

Developing oil shale and sodium would take about 750 acres of BLM land permanently out of forage production and result in a long-term annual forage loss of 300 AUMs. This would decrease the livestock forage allocation by 174 AUMs. Coal mining would take about 170 acres of BLM land out of forage production and decrease annual livestock allocation by 40 AUMs. Most surface-disturbing land and realty activities would be associated with mineral development.

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

All Alternatives

Implementing plant community management objectives would improve forage quality and quantity. Short-term decreases in forage availability would occur on vegetation manipulation areas designed to improve forage production.

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Continuing to implement an aggressive weed management program would benefit livestock grazing. Lack of sufficient weed control would result in the invasion of rangelands by plant species with little value. Significant decreases in forage production would occur on rangelands invaded by noxious weeds. Aggressive management of noxious weeds would prevent forage losses for livestock grazing.

Weed management actions would require increased operation costs for livestock operations to control noxious weed invasions onto rangelands. Likewise, the weed-free zones proposed under Alternatives C and D could require added operational costs by requiring the use of certified weed-free seed and feed, the cleaning of equipment, and holding livestock on a certified weed-free pasture prior to entering a weed-free zone.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternatives A and D

Continuing to improve riparian habitat would require an investment from livestock operators which would be recovered by future improvements in riparian quality and forage quantity.

Alternative B

Implementing proposed riparian management would intensify livestock management in priority riparian habitats, affecting livestock operations in one of two ways: (1) Increased operation costs to relocate and keep livestock out of riparian habitats when grazing limits are reached or (2) incurring forage losses when livestock are removed from an allotment early because riparian grazing limits have been reached.

Intensifying management would require more fences and more water developments to manage livestock grazing, and operator costs would increase because of increased maintenance needs and increased labor costs. In the long term, facilities necessary for riparian protection and development could enhance livestock grazing through increased forage production.

Alternative C

Proposed riparian management actions would require more intensive livestock management in priority riparian habitats. Past livestock management practices are incompatible with the management objectives proposed for riparian and wetland habitats. Affected livestock operations would be impacted in one of two ways: (1) increased operation costs to relocate and keep livestock out of riparian habitats when grazing limits are reached or (2) forage losses when livestock are removed from an allotment early because riparian grazing limits have been reached.

Riparian management objectives would require more fences and more water developments to manage livestock grazing in priority habitats. Operator costs would increase because of the increased maintenance needs and increased labor costs associated with necessary livestock management and control. However, forage quality and quantity would be improved on riparian habitats, benefitting livestock grazing.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternatives A and D

Horse numbers in all herd areas have consistently been above their forage allocation level and forage use by these excess numbers of horses comes, in part, from forage allocated to livestock. Achieving wild horse management levels as proposed, in a reasonable time frame, would result in minimal impacts to livestock grazing. If horse numbers remain above proposed management levels, as has happened in recent history, livestock grazing allocations would be affected by short-term loss of forage available to livestock.

Alternative B

Reducing forage allocation levels for wild horses would make about 1,050 AUMs of forage available for reallocation. Because of diet similarity, a significant proportion of this available forage would be allocated to livestock, resulting in about a 10 to 15 percent increase in livestock forage available to each of two livestock operations.

Alternative C

Designating the West Douglas and North Piceance Herd Areas as HMAs would require a reallocation of available forage within these areas. The entire reallocation would come from the livestock allocation. In the case of West Douglas, about 1,300 AUMs allocated to one livestock operation would be taken from that operation and allocated to wild horses. About 720 AUMs would be taken from two livestock operations in the case of the North Piceance herd area.

Forage losses would amount to about 10 to 15 percent of current livestock grazing preference in all three cases. Not many livestock operations, dependent upon BLM land forage, have the flexibility to absorb such a significant loss in livestock forage.

The forage loss created for livestock would occur during periods critical to all three livestock operations. In the case of West Douglas, this critical period is spring and winter use for livestock. Winter and spring grazing is critical to this livestock operation, as the operation does not have sufficient private land to supplement this loss.

The critical use period for livestock grazing in the North Piceance herd area is summer range. Without exception, all dependable drinking water supplies for both wild horses and livestock occur on private lands. Forage was allocated to livestock on BLM lands to the extent of water availability. A decreased forage allocation would not only result in a forage loss to livestock, but also a forage loss to wild horses if private water sources are fenced from horses.

IMPACTS FROM BIG GAME MANAGEMENT

All Alternatives

Continuing to improve habitat for big game also would increase forage for livestock on improvement areas.

Alternative A

Continuing to improve habitat for big game would benefit livestock grazing through increased forage production available to livestock on improvement areas. Forage allocations developed in the 1981 *White River Resource Area Grazing Management Environmental Impact Statement* (EIS) for deer and pronghorn are adequate for the forage demand of current populations for both species. This is not true for current elk populations where 5,849 AUMs of elk forage use are above the 5,004 AUM level allocated. Cattle and elk diets are very similar, so it is anticipated that on some grazing allotments there is a potential for overuse of the forage resource.

Alternative B

Implementing big game objectives would result in impacts similar to Alternative A but significant increases in big game animals, above allocation levels, and changes in forage allocations would occur.

Total elk populations would increase by 2,885 animals to a total of 4,811 elk on BLM land. These numbers would be 2.5 times greater than long-term forage allocation numbers (40 percent increase in forage needs). Elk numbers would be 5 times greater than long-term forage allocation levels in the Blue Mountain GRA, 14 times greater in Wolf Ridge/Red Wash GRA, 2.5 times greater in Crooked Wash/Deep Channel, 3.5 times greater in Piceance GRA, and nearly equal in Danforth/Jensen and Douglas/Cathedral GRAs.

Changes in deer and antelope allocations would not be expected to impact livestock grazing use except in the Wolf Ridge/Red Wash GRA. About 80 percent of the livestock grazing use in this GRA is domestic sheep (about 15,350 AUMs). Deer numbers would increase by about 2,500 head above long-term allocations. Because of the similarity in diets of deer and domestic sheep, it is estimated that deer would be utilizing about 10 percent of the forage allocated to domestic sheep in this GRA.

Alternative C

Impacts to livestock grazing would be very similar to Alternative A with the exception of forage demands of elk. Current elk populations would be provided for under this alternative requiring a forage demand of 10,853 AUMs, which is two times greater than allocated in the 1981 Grazing EIS.

As noted under Alternative B, some conflict with livestock grazing would be anticipated on some grazing allotments. Forage use conflicts would be fewer under this alternative as a result of decreasing elk populations. Specific monitoring programs would be necessary to identify problem areas. Forage allocations would require adjustment based upon monitoring with specific conflict areas.

As noted under Alternative B, additional forage losses would occur from increased deer numbers in Wolf Ridge/Red Wash GRA . Here, those numbers would increase further to almost 3,000 deer above long-term allocation levels. It is estimated that these deer would be using about 12 percent (1,840 AUMs) of the forage allocated to domestic sheep in Wolf Ridge/Red Wash GRA.

Alternative D

Providing for current elk populations would require a forage demand of 10,853 AUMs, which is two times greater than allocated in the 1981 Grazing EIS.

Forage use conflicts on some grazing allotments would be fewer under this alternative as a result of decreasing elk populations. Forage allocations would require adjustment based upon monitoring with specific conflict areas.

Increasing deer populations in Wolf Ridge/Red Wash GRA (3,000 above long-term allocation levels) would result in additional forage losses. It is estimated that these deer would be using about 12 percent (1,840 AUMs) of the forage allocated to domestic sheep in Wolf Ridge/Red Wash GRA.

CUMULATIVE IMPACTS ON LIVESTOCK GRAZING MANAGEMENT

Alternative A

Most impacts to livestock grazing would be short term and could be mitigated through conditions of approval when authorizing impacting activities. Long-term losses of forage production would occur from development of facilities such as roads and mineral production facilities. A significant forage loss could occur on one or two livestock operations resulting in income loss to those operations. Mitigation for these losses has not occurred in the past, and mitigation is not proposed for future losses of livestock forage.

About 12,330 acres of BLM land has been permanently taken out of forage production because of past management actions. An additional 16,500 acres would be permanently taken out of forage production because of management actions proposed (see Cumulative Impacts on Plant Communities). A cumulative loss of 11,500 AUMs of annual forage production would be lost. Assuming a loss in proportion to allocation levels, about 58 percent, or 6,670 AUMs, of this would be a cumulative loss for livestock grazing. This represents a 5 percent loss in comparison to current livestock grazing levels, or a loss of forage sufficient to sustain 555 cows year-long.

Alternative B

Cumulative losses of 3,300 AUMs from surface-disturbing activities would be the same as described under Alternative A. Potential for increased forage losses to livestock from increased big game populations could occur under this alternative.

Increased elk forage needs in the Blue Mountain, Wolf Ridge/Red Wash, Crooked Wash/Deep Channel, and Piceance GRAs would be about 10,000 AUMs. It is estimated that about 2,500 AUMs would come from livestock forage allocations, representing a 3 percent loss in livestock forage in these same GRAs. An additional loss of about 10 percent (1,500 AUMs) to domestic sheep use could occur in Wolf Ridge/Red Wash GRA from increased deer forage needs.

A cumulative forage loss of 7,300 AUMs, currently allocated for livestock grazing use, could occur under this alternative. That is 6 percent of the total livestock allocation in the resource area or sufficient forage for 608 cows yearlong. This is an increased forage loss of 630 AUMs (9 percent) from Alternative A.

Alternative C

Forage losses of 4,054 AUMs, from surface-disturbing activities noted under Alternative A, would also occur under this alternative. Forage losses from increased elk numbers identified under Alternative B would be less under this alternative. That number would be reduced to an estimated 1,460 AUMs under this alternative, representing less than 2 percent of the livestock forage allocation in affected GRAs.

An additional loss of forage in Wolf Ridge/Red Wash GRA would occur from increased deer numbers. About 1,840 AUMs of forage allocated to domestic sheep could be lost in Wolf Ridge/Red Wash GRA. Increased wild horse numbers proposed under this alternative would require a 2,700 AUM forage demand that would be lost from livestock grazing uses.

A total forage loss of 10,054 AUMs, currently allocated for livestock grazing, could occur under this alternative. That would represent about 8 percent of the total livestock grazing use in the resource area.

Alternative D

Impacts from surface-disturbing activities, resulting in a forage loss of 3,300 AUMs, would be the same as described under Alternative A. Livestock forage losses from increased big game populations would be the same as Alternative C, at an estimated 3,300 AUMs.

A cumulative forage loss of 6,600 AUMs currently allocated for livestock grazing use could be lost under this alternative. This would represent about 5 percent of the livestock forage allocation in the resource area or sufficient forage for 550 cows yearlong. This is a decrease in forage loss of 70 AUMs (1 percent) from Alternative A.

IMPACTS ON WILD HORSE MANAGEMENT

IMPACTS FROM WILD HORSE MANAGEMENT

Alternative A

Managing the Piceance-East Douglas Herd Management Area (HMA) to accommodate 60-140 horses and provide 2,100 AUMs of forage would contribute to near optimum wild horse fecundity. Continuing to maintain horse bands in pasture C and Boxelder portions of the HMA would result in winterkill during winters of abnormally large snowfall.

Alternative B

Reducing the Piceance-East Douglas HMA to 146,200 acres (a reduction of 18,530 ?? acres) by excluding the patented oil shale claims (Boxelder and Pasture C) from the HMA, would eliminate a major conflict between wild horses and mineral development (oil shale, sodium, and oil and gas). Loss of 18,530?? acres of forage would reduce wild horse AUMs by 686 in the HMA. Managing the reduced Piceance-East Douglas HMA to accommodate 60-70 wild horses and provide 1,050 AUMs of forage would be the lowest population level at which a viable wild horse could be maintained.

Removing all wild horses from the North Piceance and West Douglas herd areas would decrease competition between horses for forage, water and living space in the short term. As a result of this, herd fecundity would be improved over the short and long terms. Impacts from horse gathering and abnormally large snowfall would be the same as described for Alternative A. Experience in removing horses and improved technique would eliminate mortality associated with gathering operations.

Alternative C

Designating two new HMAs would add 185,000 acres of HMA and increase the available forage for wild horses by 1,950 AUMs. Managing the existing and two new HMAs to accommodate 320 horses and provide 4,800 AUMs would improve herd fecundity, genetics, and the desirability of horses for adoption.

Alternative D

Expanding the Piceance-East Douglas HMA to include the unfenced Greasewood Allotment in the North Piceance HA would improve the ability to manage the HMA and increase the horse habitat, offsetting any habitat loss as a result of mineral development. Managing the expanded Piceance-East Douglas HMA to accommodate 95-120 horses and provide 2,100 AUMs would enhance habitat conditions for wild horses and maximize their productivity.

IMPACTS FROM OIL AND GAS MANAGEMENT

Alternatives A, B, and D

Continuing to develop oil and gas would be a principal impact upon the wild HMA in two areas: (1) The Douglas Creek area, specifically in the Rocky Point and Philadelphia Creek fields, and the (2) Piceance Basin,specifically in the Sagebrush Hills gas field. Up to 2,000 acres could be disturbed in the Douglas Creek area. Due to the prevailing topography, the majority of this disturbance would result from access road construction. The principal negative impact to horses in this area would result from physical and spatial disturbance associated with development and maintenance of oil and gas production. This would be a continuing long-term impact.

In the Piceance Basin, within the Boxelder portion of the wild horse range, projected development could disturb up to 970 acres. Approximately 50 percent of this disturbance, 440 acres, could be expected to occur within the pinyon-juniper vegetation type. Because the principal value of pinyon-juniper in this area is cover, the negative impact to wild horses in the short term would be loss of cover. In addition, there would be an associated short and long-term spatial and temporal disturbance due to production and facility maintenance.

Alternative C

The impacts of oil and gas development would be the same as those described for Alternative A, however, the magnitude of these impacts would be much greater because over half the projected oil and gas development would occur in and adjacent to the Texas Creek HMA. As many as 4,000 acres could be disturbed in that area. Aside from the immediate physical disturbance to the horses, surface disturbance of this magnitude would have an obvious

negative impact on quality of the habitat through loss of cover and forage.

IMPACTS FROM OIL SHALE MANAGEMENT

Alternatives A, C, and D

Developing oil shale, specifically in the C-A off-tract disposal area, would reduce cover and forage and increase temporal and spatial disturbance. A complete description of these impacts can be found in 1985 *C-A Offtract Lease EIS.*

Alternative B

Developing oil shale, specifically in the C-A off-tract disposal area, would reduce cover and forage and increase temporal and spatial disturbance. A complete description of these impacts can be found in 1985 *C-A Offtract Lease EIS.*

IMPACTS FROM SODIUM MANAGEMENT

All Alternatives

Developing sodium on approximately 1,300 acres immediately west of Yellow Creek on the east end of 84 Mesa, within the HMA, would reduce wild horse winter range. This area provides 130 AUMs of winter forage for wild horses, which is critical to horse survival during winters of heavy snowfall.

IMPACTS FROM WOODLAND MANAGEMENT

Alternative A

Continuing to implement the unplanned and unmanaged sale of firewood and cedar posts for personal/commercial use within the HMA would have a long-term negative impact on wild horses as a result of both surface and physical disturbance of their habitat.

Alternative B

Maximizing woodland product harvest, including random occurrences of activity within the Piceance-East Douglas HMA, would have long-term negative impacts on wild horses from both surface disturbance of their habitat and physical disturbance of the horses themselves. This impact would be principally caused by permitted and unpermitted wood and post cutting.

Alternative C

Implementing proposed woodland management practices would tend to limit physical disturbance of wild horses in their habitat and eliminate negative impacts from loss of cover as a result of indiscriminate wood and post cutting. Positive benefits to wild horse habitat could occur (through enhanced forage production) as a result of managed, block harvest of wood products for multiple resource benefits.

Alternative D

Implementing proposed woodland management practices would tend to limit physical disturbance of wild horses in their habitat by confining that impact to localized areas. This would be a positive impact relative to the present situation. Managing wood product harvest would also eliminate negative impacts from loss of cover which result from indiscriminate wood and post cutting. Positive benefits to wild horse habitat could occur (enhanced forage production) as a result of managed, block harvest of wood products for multiple resource benefits.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternative A

Continuing to manage livestock in accordance with Environmental Consequences, Alternative A, *Proposed Grazing Management Program for the White River Resource Area, Draft Environmental Impact Statement* (USDI, BLM, April 1980) would result in the following impacts on wild horses: all wild horses would be removed from the North Piceance and West Douglas herd areas, long-term forage allocations would provide for a maximum of 140 horses (2,100 animal unit months (AUMs)) within the Piceance and East Douglas HMA. Management of the wild horse population as described in the HMA plan would decrease competition between horses for forage, water, and living space in the short term. As a result, herd fecundity would be improved over the short and long terms. Wild horses have and would continue to benefit from physical range improvements such as water developments and vegetation

manipulations which have substantially increased forage quantity and quality and dependability of water sources on a year-long basis. This is particularly the case in the Piceance Basin portion of the HMA.

Alternative B

Implementing improved management systems and practices would benefit wild horses from enhanced rangeland productivity. Prescribing physical range improvements such as water developments and vegetation manipulations would be advantageous to horses by substantially increasing forage quality and quantity and providing a dependable source of water on a yearlong basis.

Alternatives C and D

Enhancing rangeland productivity, as a result of continued implementation of improved management systems and practices such as water developments and vegetation manipulations, would continue to benefit wild horses by substantially increasing forage quality and quantity and providing dependable sources of water on a yearlong basis.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Continuing to allow unrestricted motorized vehicle travel would create short-term spatial disturbance to wild horses and, over the long term, would degrade horse habitat through vehicle surface disturbance.

Alternative B

Restricting motorized vehicles to existing roads and trails would reduce disturbance to horses and help prevent destruction of vegetation.

Alternatives C and D

Restricting motorized vehicle traffic to designated roads and trails, closing unnecessary roads and trails, and regulating vehicle use within HMAs would both reduce disturbance to horses and help prevent destruction of vegetation, thus minimizing impacts of motorized vehicle travel on horses.

CUMULATIVE IMPACTS ON WILD HORSE MANAGEMENT

All Alternatives

Surface-disturbing activities within the HMA would reduce cover and forage proportional to the amount of acreage disturbed as a result of development. Successful post-production revegetation of disturbed areas could offset the loss of up to 75 percent of the forage, but any loss of tree cover (Pinyon/juniper) would be long term.

New roads associated with development would constitute long-term loss of habitat. Temporal disturbance associated with the roads would be periodic, but also long term.

Alternative A

Managing the Piceance-East Douglas HMA to accommodate 60-140 horses and provide 2,100 AUMs of forage would contribute to near optimum wild horse fecundity.

The existence of oil shale claims would continue to affect management of the HMA. The essentially unrestricted harvest of wood in the Piceance Basin would continue to reduce effective cover for wild horses in the HMAs for the long term.

Alternative B

Managing the reduced Piceance-East Douglas HMA to accommodate 60-70 wild horses and provide 1,050 AUMs of forage would be the lowest population level at which a viable wild horse could be maintained.

Taking the Boxelder and Pasture C portions out of the existing HMA, while making a net habitat reduction of 18,530 acres, would also eliminate a major HMA conflict in Piceance Basin.

Alternative C

Managing the existing and two new HMAs to accommodate 320 horses and provide 4,800 AUMs would improve herd fecundity, genetics, and the desirability of horses for adoption.

Adding two new HMAs (185,000 acres) and 1,950 AUMs of wild horse forage would provide more land area and a greater variety of vegetation for cover and forage.

Alternative D

Managing the expanded Piceance-East Douglas HMA to accommodate 95-120 horses and provide 2,100 AUMs would enhance habitat conditions for wild horses and maximize their productivity.

Adding the Greasewood allotment to the existing Piceance-East Douglas HMA would solve the problem of the presently unfenced HMA boundary and also provide additional horse habitat to offset disturbance associated with mineral development.

IMPACTS ON BIG GAME MANAGEMENT

For all alternatives, impacts and/or acres affected pertain to BLM-administered land within the White River Resource Area unless otherwise specified.

IMPACTS FROM BIG GAME MANAGEMENT

Alternative A

Maintaining elk populations in excess of allocated forage would presumably reduce vegetation reserved for watershed stability, plant health, and small game/nongame requirements, aggravate competition for allocated livestock forage, and with excessive plant use, induce long-term declining trends in forage plant vigor and production.

Severe winter range timing limitation (TL) stipulations would minimize acute winter mortality only under most severe mid- to late-winter conditions. However, this measure fails to coincide with the early spring period when animals experience their poorest physiological state and are most susceptible to late season storms. Production area TL stipulations apply only to elk calving, as deer and antelope fulfill birthing functions in a manner which defies discrete mapping.

Implementing vegetation treatment guidelines for big game promotes interspersion of cover with forage, however, management favors forage development. Guidelines address few specialized cover requirements and require reservation of a minimum 22 percent (50 percent of optimal) suitable big game cover on project sites. Applying habitat treatments as prescribed in the Piceance Basin Habitat Management Plan would enhance forage quality and availability, but only in the Danforth, Piceance, and Douglas/Cathedral GRAs.

Woodland and mountain browse treatments would be capable of optimizing forage:cover ratios on 10-15 percent of BLM winter ranges (up to 33 percent of total severe winter range extent in the Danforth and Piceance GRAs) or 35 percent total summer range extent in the Piceance and Douglas/Cathedral GRAs.

Alternative B

Implementing forage retention guidelines would help maintain quantities (80 percent on GRA basis) and distribution of important winter forages adequate to minimize short-term population reductions, however, strong, short-term forage deficiencies (50 percent) could still occur on deer winter and pronghorn yearlong ranges, particularly where sagebrush is the principal forage (i.e., Wolf Ridge/Red Wash, Crooked Wash/Deep Channel and Douglas/Cathedral GRAs). Maximum forage reduction levels could extend across 30-40 percent of total winter range extent. Limiting sagebrush reductions (up to 20 percent) on deer severe winter ranges would minimize the potential for strong localized effects.

Cover retention objectives would minimize the potential for treatment areas to remain suboptimal for big game forage utility. Insufficient residual cover could reduce localized deer forage utility by up to 50 percent of optimum. Thermal cover guidelines would allow maintenance of minimally (25 percent) adequate thermal cover for deer. Long-term modification of special cover types (e.g., spruce-fir and aspen stands), important for summer and production activities, would be minimized as in Alternative A.

Modified severe winter TL stipulations (applied every year) would minimize chronic energy expenditures, and road density limitations on big game critical habitats would stabilize or reduce current levels of avoidance-related effects. These measures minimize adverse effects on habitat utility and animal physiology.

Treating unsuitable sagebrush forage types would be integral with the livestock management program except in the Douglas/Cathedral and Blue Mountain GRAs, where supplemental treatment appears desirable and appropriate. Treatment of mountain browse types is comparable to Alternative A, but would be distributed more equitably across the area. Manipulating pinyon/juniper would

enhance range utility, supplement the long-term forage base, and reduce big game's influence on shrub vigor and condition. Treating spruce-fir and aspen types would be redirected to maintain the value of forest stands as big game cover.

Alternative C

Cumulative big game forage use over allocation represent 10 percent of the reserved forage base in the short term and 8 percent in the long term. Net forage deficits are relatively evenly distributed among summer and winter use periods (7681 summer AUMs, 9450 winter AUMs).

Deer population discrepancies in the Douglas/Cathedral and Wolf Ridge/Red Wash GRAs would continue to be the largest contributor to overall forage deficiencies (13,149 AUMs or 77 percent of total). Largest elk-related deficiencies occur on the Danforth and Piceance summer ranges (1619 AUMs, 9 percent of total deficit) and Wolf Ridge/Red Wash GRA winter ranges (864 AUMs). It is believed that proposed vegetation treatments would be capable of fully accommodating big game forage requirements in the long term.

Reducing deer use (relative to Alternative A) in the Piceance (40 percent) and Crooked Wash/Deep Channel (50 percent) GRAs should substantially improve the long-term condition and vigor of deciduous browse and sagebrush forages across all winter ranges available within these GRAs. Compared to Alternative B, reductions in deer (10-20 percent) and elk (40-50 percent) use would further help in achieving forage use goals on the Piceance and Douglas/Cathedral GRA's winter ranges.

Proposed forage retention guidelines would maintain quantities (90 percent on GRA basis) and distribution of important winter forages adequate to prevent short-term Unit-wide reductions on deer general winter range and all pronghorn ranges. Maximum forage reduction levels could extend across 50 percent of total BLM winter range extent, but remaining forage would still be sufficient to sustain desired population objectives in the long term and prevent any strong, localized deficiencies in the short term.

Proposed cover retention guidelines would optimize habitat utility for deer within any treatment area, and discourage treatment of ranges with acceptable forage and cover distribution. The guidelines would help relieve excessive late winter demands on preferred and alternate woody forages, particularly deciduous forms beneath pinyon/juniper canopies. The prescriptions would relegate most manipulation efforts to non-essential cover or sub-optimal forage components, thereby increasing the long-term availability and distribution of suitable forage.
Thermal cover guidelines would satisfy deer requirements throughout the winter by maintaining or allowing development of coniferous cover of optimal extent and distribution.

Unavoidable disruption of special big game cover types (i.e., forest and deciduous shrub cover/forage) would be conditioned such that site potential would be maintained and reclamation requirements attached to accelerate recovery of desired stand composition and structure in the long term. Special attention is extended to aspen, serviceberry and chokecherry stands in the Blue Mountain GRA, where CSU stipulations require that advance reclamation commitments be made to reestablish stand composition, extent, vigor, density and form.

Expanded TL stipulations would substantially increase range involvement, extending to an average 35 percent and 60 percent of wintering deer and elk populations and, during severe winters, up to 70 percent of deer and 85 percent of elk. Limiting harassment on these ranges would further minimize chronic energy expenditure during the winter and spring periods.

Imposing a conditional TL stipulation on deer and elk critical summer ranges would minimize adverse displacement and harassment on 54 percent of all deer and elk summer ranges where dispersed birthing and post-partum functions are fulfilled.

Alternative D

Sagebrush forage on deer winter ranges and pronghorn ranges would be reserved at ceilings and dispersion levels as in Alternative B. Cover retention and design criteria are similar to those in Alternative C, but dispersion requirements are reduced. Adequate quantities of cover on all big game ranges (i.e., minimum of 30 percent) would be retained. Although optimum cover distribution could be achieved within these criteria, habitat utility on treatment sites for deer may be reduced to 60-75 percent of optimum. Disruption of special big game cover types would be minimized.

With reduced population objectives and improved range utility achieved through cover retention objectives, noticeable gains toward browse use targets and browse condition ratings should be realized.

Abandoning TL stipulations on winter concentration areas and pronghorn winter range would have little effect during severe winters, but would have pronounced localized effects during normal winters, especially concentrated winter elk use in the Wolf Ridge/Red Wash and Piceance GRAs. Protection during normal winters would extend to 20 percent of deer and 35 percent of elk.

Management of Moosehead Mountain and Oak Ridge State Wildlife Area (e.g., NSO stipulation, road closures) would have the same influence on big game as presented in Alternative C's Oil and Gas section.

IMPACTS FROM SOILS, SURFACE WATER, GROUND WATER, AND WATER RIGHTS MANAGEMENT

Alternatives A and B

Improving watersheds complements habitat improvement goals by improving long-term herbaceous forage availability for big game. In particular, channel restorations would improve the distribution of seasonal water for pronghorn in the Wolf Ridge/Red Wash GRA. Surface water management actions would contribute to the long-term improvement of herbaceous forage availability on up to 7 percent of the deer severe winter ranges and 32 percent of overall pronghorn ranges and on riparian sites encompassed by deer critical summer ranges.

Alternative C

Applying conditional NSO stipulations to landslide areas and fragile soils would substantially reduce deterioration in soil productivity associated with accelerated erosion induced by surface disturbing activities across all big game ranges.

Watershed improvements would have the same influence as Alternative A, but improved herbaceous forage availability would be expanded to include 20 percent of the deer severe winter range in the Wolf Ridge/Red Wash, Crooked Wash/Deep Channel, and Douglas/Cathedral GRAs, and 41 percent of the pronghorn year-round range in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs.

Alternative D

Watershed improvements would have the same influence as described under Alternative C.

Designating NSO stipulations on landslide areas and CSU stipulations on soils susceptible to erosion would reduce deterioration in soil productivity and accelerated erosion across all big game ranges at levels only slightly reduced from Alternative C.

IMPACTS FROM OIL AND GAS MANAGEMENT

Alternative A

Oil and gas development over the next 20 years would occupy up to 10,000 additional acres and another 6,700 acres would be modified with respect to big game forage and cover. Current and proposed oil and gas activities are expected to impact the Crooked Wash/Deep Channel, Piceance and Douglas/Cathedral GRAs most heavily, where established fields are coextensive with much of the critical or important big game ranges.

At 80-acre spacing, total surface disturbance would cause long-term reductions of woody forage and cover and fragmentation of effective thermal and security cover on 12-16 percent of the land area within a field.

Full field development could remove up to 10 percent of sagebrush winter forage on deer severe winter ranges and winter concentration areas within established fields in the Douglas/Cathedral, Piceance and Crooked Wash/Deep Channel GRAs.

Developed oil and gas fields in the Douglas/Cathedral and Crooked Wash/Deep Channel GRAs currently support road densities of 3.0 to 4.5 miles per square mile. Within the next 20 years, at projected 80-acre well spacing, unregulated road use at 4.5 or more miles per square mile may depress big game habitat effectiveness by 40-60 percent. This effect could ultimately depress the capacity of GMU 11, 21, and 22's deer severe winter ranges by up to 10 percent, and GMU 21's critical deer summer and general winter ranges by 10-15 percent and 15-20 percent, respectively. Similarly, the capacity of GMU 21's elk severe winter and critical summer ranges may be depressed by up to 25 and 5 percent, respectively.

Alternative B

Oil and gas development activity and exclusion areas would remain largely unchanged from that discussed in Alternative A. However, lease stipulations consistent with those

developed in the Colorado Oil and Gas EIS would be incorporated.

Applying mitigation authorized by the standard lease terms would maintain the minimum acceptable extent and distribution of winter thermal cover on deer winter ranges and reserve a minimum of 50 percent suitable sagebrush forage, evenly distributed across deer winter and overall pronghorn ranges.

New oil and gas development (16,700 acres) would occur more frequently on pinyon/juniper slopes and ridgelines, which may interfere with the maintenance of effective cover distribution on winter ranges, particularly in the Douglas/Cathedral and Crooked Wash/Deep Channel GRAs. Conversely, sagebrush and saltbush forage types would be less susceptible to long-term loss of adverse modification.

Road density limitations on big game critical habitats would reduce or stabilize unrestricted road densities to as low as 1.5 miles per square mile, reducing effective road densities by 70 percent or more, and limiting effective habitat loss to 10-20 percent during periods of animal occupation.

Alternative C

Areas excluded from oil and gas activities would be expanded to include a number of proposed ACECs, the Moosehead road closure area, and Oak Ridge State Wildlife Area. These closures would provide increased protection for deer severe winter range (5 percent in both GMU 22, and GMU 23) and summer range (6 percent in GMU 10) and for elk critical summer habitat in GMU 10 (10 percent) and critical severe winter range and production areas in GMU 23 (20 percent each).

On general deer winter ranges and pronghorn overall ranges, 80 percent of available sagebrush forage would be retained on a localized basis. Losses on deer severe winter ranges and pronghorn winter ranges would generally not occur.

Cover retention objectives would distribute cover more equitably in conformance with the average seasonal home range size of deer and reinforce desirable retention of cover in special use areas or travel lanes where continued use is contingent on animal security derived from concealment.

Conditions of approval (COAs) would discourage the loss or long-term modification of special big game cover types (i.e., aspen and coniferous forest) and special reclamation measures would be required to accelerate restoration and recovery of desirable vegetation components and conformation, particularly deciduous shrub and woodland communities in the Blue Mountain GRA.

Road density limitations on big game critical habitats would reduce or stabilize unrestricted road densities to as low as 1.5 miles per square mile, and limit habitat loss to 10-20 percent during animal occupation. Effective road density ceilings of 3 miles/square mile proposed for all big game ranges would stabilize road networks and current levels of effective habitat loss (20-30 percent) throughout the resource area. However, in heavily developed oil and gas fields the objective could to reduce road densities by up to 50 percent, and hold the level of indirect impacts on general ranges to less than one-half the unmitigated loss.

Alternative D

Oil and gas development would involve the modification of big game habitats at levels described in Alternative A.

Implementing habitat treatment guidelines would minimize or avert reductions in forage and cover or further deterioration of suboptimal habitats. Collectively, these measures would reserve forage and cover elements necessary to maintain the short-term integrity of big game ranges affected by oil and gas development and aid enhancement of long-term range utility by directing development, where possible, to areas of excessive cover or suboptimal forage types.

COAs requiring special reclamation measures would discourage the loss or long- term modification of special big game cover types (i.e., aspen and coniferous forest). Remnant aspen, serviceberry and chokecherry stands in the Blue Mountain GRA would be maintained by a CSU stipulation requiring advance reclamation commitments be made for accelerated reestablishment of desirable stand characteristics.

The conditional TL stipulation on deer and elk critical summer ranges would maintain optimal utility on 56 percent of all big game summer ranges and ensure that, on these areas, preferred cover and forage resources are available for use when young animals are most susceptible to malnourishment and predation.

Road density limitations would limit effective habitat loss on big game critical habitats similar to Alternative C.

IMPACTS FROM OIL SHALE MANAGEMENT

All Alternatives

Predefined thresholds would curtail oil shale development when forage availability is reduced to levels insufficient to sustain a deer population of 24,900 animals.

IMPACTS FROM SODIUM MANAGEMENT

Alternative A

Removing 1,550 acres of pinyon/juniper (in response to meeting projected sodium need) would likely reduce the big game woody forage base, increase disturbance, reduce pinyon/juniper woodlands as winter thermal cover, and disrupt groundwater contributions to local base flows. Short-term improvements to the herbaceous forage types may be realized following reclamation, and opportunities exist for enhancing big game cover:forage relationships provided adequate quantities of effective thermal and security cover remain properly distributed.

Impacts associated with surface disturbance using solution mining techniques may be comparable to intense localized oil and gas development.

Alternatives B, C, and D

Sodium development would be incorporated within the oil shale threshold criteria. Opportunities to regulate the extent of habitat disruption would aid in the maintenance of Piceance Basin's big game populations in the event sodium or oil shale development exceeded forecasts.

IMPACTS FROM COAL MANAGEMENT

All Alternatives

Up to 117,800 acres available for surface mining (Danforth/Rangely GRAs), may be rendered unavailable for wildlife use during active mining (2-30+ years). Reestablishment of herbaceous vegetation is achieved shortly after reclamation, while reestablishment of cover, woody forage and riparian in the form of coniferous or deciduous trees and shrubs is far more prolonged.

In the Danforth Study Area (all contained within the Danforth/Jensen GRA), important elk ranges currently suitable for surface mining include 72 percent and 11 percent of the critical production areas available in GMUs 211 and 23, respectively. Of the available summer range in GMU 211 in this area, 23 percent remains vulnerable to long-term modification. Remaining deer ranges are affected at individual GMU levels of $\leq$5 percent.

Pronghorn and elk habitats are involved within the Rangely Study Area would be subject to habitat modification on the order of 5-7 percent. Deer would be vulnerable to extensive loss of important winter range habitats, including 22 and 39 percent of severe winter range extent available in GMU 10 and 21, respectively.

IMPACTS FROM MINERAL MATERIALS MANAGEMENT

Alternatives A and D

BLM estate within or adjacent to the White River comprises 28 percent (2,610 acres) of the area identified as having sand/gravel potential, all of which serves as severe winter range (critical habitat) for mule deer.

Reclaiming developed sites to favor herbaceous forage would offset short-term reductions to spring forage supplies, however, long-term losses of late winter woody forage would be unavoidable for 10-15 years post-mining.

Alternative B

Applying habitat objectives along the White River corridor would limit gravel extraction's contribution to cumulative declines of important big game forage (e.g., $\leq$20 percent of that currently available on deer severe winter range).

Alternative C

Applying forage objectives for deer severe winter ranges along the White River would essentially preclude gravel extraction's contribution to cumulative declines in the sagebrush forage base south of the White River and east of Kenney Reservoir (Crooked Wash/Deep Channel, Piceance, and Douglas/Cathedral GRAs), and limit mining to those areas supporting suboptimal sagebrush stands or non-forage types.

IMPACTS FROM HAZARDOUS MATERIALS MANAGEMENT

All Alternatives

Removing and/or preventing hazardous material release minimizes potential mortality or adverse effects on reproductive or behavioral functions.

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

Alternative A

Maintaining mid- to high-seral conditions in brush and woodland types would retain values integral with big game forage and cover values across 93 percent of habitats, but would not impede management designed to improve the suitability or utility of forage or cover properties.

Community improvement is prescribed for an estimated 8 percent of the sagebrush type in low-seral condition, and 10 percent of current pinyon/juniper extent considered to be encroaching on historic shrubland types (i.e., fire disclimax). Improving degraded sagebrush and woodland sites, in the longer term, would enhance woody forage utility and its availability where pinyon/juniper reproduction impinges on desirable shrubland extent or distribution. Improved understory conditions (i.e., herbaceous diversity and density) would not only enhance the nutritional value of forage for spring and fall use, but help arrest channel erosion and the consequent decertification of adjacent uplands.

Improving rangeland condition via mechanical treatment or prescribed fire (i.e. canopy modification) may modify desirable forage or cover properties such that range utility would be adversely affected. The degree and duration of impacts depend on the extent and distribution of habitat modification and vegetation recovery timeframes.
Modifying canopies on low-seral sagebrush ranges would reduce suitable sagebrush forage on 5 percent of deer severe winter ranges and pronghorn overall range. As woody forage reestablishes on treatment areas in 15-20 years, it is likely that modest (<5 percent) gains in current woody forage availability would occur.
Restoring disclimax shrublands would involve 10-15 percent of woodland cover on deer severe winter ranges in the Danforth and Wolf Ridge/Red Wash GRAs, and 5 percent of such cover across the Piceance and Crooked Wash/Deep Channel GRAs. Woodland reduction would generally promote improved severe winter range utility, and, in the longer term, increase the extent of suitable foraging area on these late winter ranges by 10-15 percent.

Improving low-seral salt desert shrub communities would not involve canopy treatment. Community enhancement would tend to increase the diversity and availability of perennial herbs on about 3 percent of the pronghorn range in the Wolf Ridge/Red Wash GRA, with virtually no reduction in woody forage availability.

Alternative B

Widespread improvement to low- and mid-seral condition ranges (80 percent of BLM' sagebrush and saltbush types and 35 percent of its pinyon/juniper type) would be manifested in the herbaceous component, with no short term, direct influence on browse availability or condition.

Maintaining long-term high-seral conditions would tend to suppress browse regeneration (especially sagebrush), and gradually depress the production and availability of woody forage for fall and winter deer use. Perennial herbaceous production would generally favor the year-round forage base of elk, reduce their reliance on woody browse species, and ultimately offset calculated forage deficits attributable to expanded elk populations. Similarly, pronghorn populations would almost certainly benefit from seral advance on low-elevation saltbush, sagebrush, and greasewood ranges typically depauperate in perennial forbs.

Alternatives C and D

Woodland modifications conducted to improve community condition would be designed to optimize big game range utility, serving to enhance the dispersion and availability of forage producing areas on big game winter ranges and increase long-term range utility and capacity for both deer and elk.

Allowing woodlands to regenerate as big game cover on former pinyon/juniper chainings and larger woodland burns would eventually (50-60 years) restore full winter utility on, for example, 15 percent of severe winter range extent in the Piceance GRA.

Requiring the use of native species in the Blue Mountain GRA would forego opportunities to establish plants that offer prolonged availability and superior production relative

to native species and enhance diet quality (e.g., leguminous forbs).

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Controlling noxious and problem weeds in compliance with Area and Bureau National Environmental Policy Act (NEPA) documents would minimize short-term losses of forage and cover and prevent expansion of noxious weeds that threaten big game habitat suitability in the long term.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Current riparian management targets are coincident with about 50 percent and 10 percent of critical summer ranges for deer and elk in Piceance and Douglas/Cathedral GRAs (20 percent resource area wide). Riparian improvements would offer linear water sources serving large habitat tracts while enhancing important herbaceous broadleaf vegetation necessary to maintain a high nutritive plane for lactating females.

Alternative B

Restoration or enhancement of identified riparian systems would improve water availability and herbaceous forage quality and availability on 10-15 percent of critical big game summer ranges in the Blue Mountain, Piceance, and Douglas/Cathedral GRAs. Long-term riparian and channel improvements on major low-elevation systems (e.g. Crooked Wash/Deep Channel and Yellow Creek) would restore or reverse degradation of primary and tributary valleys on 10 percent and 25 percent of severe winter ranges in the Crooked Wash/Deep Channel and Piceance GRAs, respectively.

Alternatives C and D

Riparian restoration and enhancement would affect big game summer range components the same as Alternative B. Improving riparian areas and channels on major low-elevation systems would be expected to restore or reverse degradation of primary and tributary valleys on 20 percent and 25 percent of severe winter range in the Crooked Wash/Deep Channel and Piceance GRAs, respectively.

IMPACTS FROM SPECIAL STATUS PLANTS AND ACEC MANAGEMENT

Alternatives A and B

NSO stipulations protecting small tracts (averaging 33 acres and comprising less than 1 percent of GRA 5) would add incrementally to the maintenance of suitable big game habitat (i.e., security and thermal cover), but would not be significant individually.

Alternatives C and D

Applying NSO stipulations to several entire ACECs would reserve big game habitat from incompatible surface disturbance, including 4.5 percent of the severe winter range (but less than 1 percent of general winter and summer range) in the Piceance GRA, and about 3 percent of the Wolf Ridge/Red Wash GRA's winter range extent. Protecting plant associations within the Oil Spring Mountain and Moosehead Mountain ACECs would prevent adverse surface occupation or disturbance on 2 percent of all spruce-fir and 48 percent of aspen forest types available in the Douglas/Cathedral and Blue Mountain GRAs, and about 14 percent of Blue Mountain GRA's deciduous browse community.

IMPACTS FROM TIMBER AND WOODLANDS MANAGEMENT

Alternative A

Douglas-fir and spruce/fir harvest would be confined to Piceance and Douglas/Cathedral GRAs. Assuming tree regeneration would begin to regain big game cover value 30 years post-harvest, reductions in effective forest cover would stabilize at about 20 percent. Applying big game cover distribution criteria to commercial harvesting would allow up to 80 percent of individual stands to be manipulated.

Properly designed, retained and regenerating canopies would be sufficient to maintain summer range utility and thermal functions. Canopy reductions would elicit dramatic local short-term increases in herbaceous and woody forage production that represent minor (about 1 percent) contributions to the seasonal forage base. The effectiveness of BLM stands as hiding and thermal cover (particularly elk) during the fall and winter could be seriously compromised on a localized basis and may aggravate shifts in animal distribution to adjacent private lands.

Continuing to harvest personal-use firewood may involve the long-term removal of tree-like forms of Gambel oak (4+" diameter) which are a locally important component of big game thermal and hiding cover on summer and winter ranges, and are thought to be limited in supply.

With the exception of the Piceance and Blue Mountain GRAs, manipulating pinyon\juniper woodlands could enhance big game range utility by increasing the interspersion of cover and forage. Although variable among GRAs, cover distribution equivalent to optimum could be achieved across 4-6 percent of BLM-administered deer and elk summer and winter ranges in the short term. Concurrently, harvesting would increase foraging area extent on BLM lands by 2-4 percent across most the area's summer and winter ranges.

Alternately, short-term woodland harvest could impose cover deficient conditions (<40 percent cover) 3-4 percent of summer and winter ranges, including up to 63 percent of the severe winter range in the Danforth/Jensen GRA. These effects would persist for 60+ years post-harvest.

Alternative B

Overall long-term availability of coniferous forest cover in the Douglas/Cathedral and Piceance GRAs would be reduced by about 4 percent. Local long-term cover reduction would average about 5 percent along the Cathedral Bluffs and the southern tip of Piceance Basin. Localized short-term cover modification could reduce the availability of suitable big game (especially elk) cover in the Cow Creek and Cathedral Bluffs areas by about 23 percent and 12 percent, respectively.

Harvesting nine percent of commercial aspen acreage, a preferred and often limited summer habitat component of both elk and deer, would effect 35 percent of the aspen in Danforth/Jensen GRA and 3 percent in the Piceance GRA. It is likely that harvesting on a 70-year rotation would maintain at least half of aspen's long-term cover function and, in the Wilson Creek area (Danforth/Jensen GRA), markedly increase local summer and fall big game (especially elk) forage capacity.

Personal-use cutting of 50 cords of oakbrush per year may still be sufficient to deplete the extremely limited supply of arboreal oakbrush motts (approximately $\geq$4" basal diameter) which grow on relatively level and easily accessible terrain. Oak of this conformation provides a unique cover type for big game.

Harvesting commercial pinyon/juniper would impact big game habitats only in the Piceance and Douglas/Cathedral GRAs. It is assumed that selection-cut acreage would retain adequate cover properties while serving with half the forage capacity of clearcuts. Clearcut and selective harvest would effectively increase foraging area extent by 11 percent and 22 percent on Piceance and Douglas/Cathedral GRA winter ranges. In the long term, clearcut acreage could leave suboptimal cover on up to 3 percent of the winter ranges in the Piceance and Douglas/Cathedral GRAs. Alternately, harvest would be capable of optimizing cover and forage distribution on 3 percent of these GRA's summer and winter ranges.

Alternatives C and D

Harvesting in small, widely-dispersed projects as a tool to achieve other resource objectives would involve up to 3 percent of the spruce and fir types in the resource area. Incorporating big game-oriented design features and objectives to canopy modifications would effectively maintain or enhance the utility of big game cover in the short and long term.

Harvesting aspen in response to other resource (including big game) needs and deteriorated stand conditions would enhance both the long and short-term forage and cover values associated with aspen on big game summer and fall ranges.

Personal use firewood cutting of woodlands would have the same general effects on big game as in Alternative A.

By integrating proposed cover retention objectives, commercial woodland harvest designs would optimize big game range utility and maintain adequate levels and distribution of thermal cover on all big game winter ranges. In the long term, clearcut and selection harvest would effectively increase foraging area extent by 2 percent and 4 percent on Piceance and Douglas/Cathedral GRA winter ranges, respectively, and by up to 1 percent on

Douglas/Cathedral GRA's summer ranges. Considered alone, long-term clearcut acreage would be capable of optimizing cover and forage distribution on up to 3 percent of Piceance GRA's severe winter ranges, but less than 1 percent of general summer and winter ranges in either GRA.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternative A

Implementing the primary objectives of the Grazing EIS would increase the vigor, abundance and availability of herbaceous forage and reduce the intensity of ungulate grazing use.

Current vegetation treatment schedules would affect about 131,300 acres of important big game habitat features. With no clearly defined cover or forage retention guidelines and, at the implementation levels prescribed, it may prove difficult to accommodate forage and cover requirements necessary to avert strong short and long-term impacts to big game range capacity and maintain or enhance community conditions necessary to sustain a desirable complement of associated, particularly non-game, fauna.

Woodland treatments, on average, would be capable of achieving cover distribution at levels equivalent to optimum on 5-10 percent of all BLM-administered deer and elk ranges, and notably, 25-40 percent of BLM's critical severe winter ranges in the Piceance and Crooked Wash/Deep Channel GRAs. Woodland treatments would concurrently increase foraging area extent by 10-20 percent in the long term, but this increase may be undermined without adequate forms and distribution of cover. Conversely, woodland treatment could impose cover deficient conditions (20 percent) on up to 5 percent of overall winter range extent, including up to 15 percent of BLM severe winter range in the Crooked Wash/Deep Channel and Piceance GRAs.

Scheduled sagebrush manipulations would convert sagebrush types to a grass-dominated character for 20 to 30 years post-treatment, and have potential to reduce winter range forage availability, on BLM lands by 30 to 40 percent and exert strong short-term (15-20 year) population reductions.

Conversely, and with optimal case-by case consideration of forage value, reduction in suitable sagebrush forage types could be held to 10 to 20 percent on all ranges (35 percent in Crooked Wash/Deep Channel GRA). These treatments levels are generally consistent with the maintenance of desirable long term forage properties (manipulation rates in Crooked Wash/Deep Channel likely threshold to long-term woody forage reduction).

Fencing, water development, and construction of trails on big game ranges would generally be beneficial. Constructed waters have been influential in enhancing the utility of big game summer and fall ranges lacking reliable water, most notably in the Piceance and Douglas/Cathedral GRAs for elk.

Not issuing grazing permits on public lands within state wildlife areas would reserve forage production for big game and would help to attract and retain concentrated winter use on public rather than private agricultural lands, and has proven particularly advantageous in accommodating increased numbers of elk.

Alternative B

Vegetation treatments would occur at the same levels as Alternative A.

Manipulations of woodland cover would have the same potential for both optimizing or creating cover deficient habitat, but cover retention ceilings would distribute adverse effects across double the area--minimizing the potential for strong localized influences.

Through the 60+ year canopy redevelopment stage, woodland treatments would moderate the effects of big game winter use on forage vigor by increasing forage availability (especially browse for deer, herbaceous for elk) on at least 5-10 percent of winter range extent, including up to 30 percent of severe winter range in the Piceance and Crooked Wash/Deep Channel GRAs. Areas of suboptimal cover would allow enhanced late fall/early spring use, but may fail to modify snow conditions sufficiently (e.g., prevent crusting) or provide security cover of an extent necessary for extended winter use.

Proposed sagebrush treatments would affect short-term winter forage availability at levels similar to those discussed in Alternative A, however, sagebrush retention guidelines would limit losses of suitable sagebrush forage to prevent long-term suppression of overall winter range capacity and minimize significant short-term forage loss on severe winter ranges. Treatment limitations would further encourage manipulation of stands unsuitable for big game use and could increase the extent of suitable forage stands by up to 15 percent in the long term.

Conditional public land grazing within state wildlife areas (SWAs) would serve to improve or maintain wildlife habitat values. Failure to manage accordingly would result in revocation and reversion to the Alternative A option.

Alternative C

Vegetation treatments would occur at the same level as Alternative A, but integrating big game cover retention objectives would optimize range utility in all project areas. Proposed woodland treatments would improve cover distribution and increase foraging area extent at levels discussed in Alternative A (i.e., 5-10 percent of BLM's big game ranges, including 25-40 percent of Piceance and Crooked Wash/Deep Channel GRA's severe winter ranges).

Maintaining full forage availability on deer severe winter ranges and pronghorn winter ranges in the short term would moderate use of alternate woody forages. By relegating treatments to unsuitable forage types, the availability or utility of forage would necessarily improve in the long term, and further reduce browse use levels and big game's influence on shrub expression. On remaining ranges, reductions in suitable sagebrush forage would be limited to 10 percent by GRA and could be reduced by up to 20 percent on a localized basis (i.e., 500-acre parcels). Treatment of dense, rank sagebrush stands unsuitable as forage would be strongly emphasized and would increase foraging area extent area-wide by as much as 25 percent in the long term.

Depending on site-specific sagebrush forage utility, forage retention objectives would be more apt to alter the extent of forage enhancement activities, as well as modify project siting and configuration. Sagebrush targets could be reduced by 10-20 percent in the Wolf Ridge/Red Wash and Piceance GRAs and up to 30 percent in the Crooked Wash/Deep Channel GRA. In the long term, forage losses in these GRAs would be fully offset by improved suitability of treated woodland and sagebrush acreage.

Conditional public land grazing within SWAs would be similar to that discussed in Alternative B.

Alternative D

Proposed sagebrush treatments would affect short-term winter forage availability the same as Alternative B. Sagebrush retention guidelines would limit losses of suitable sagebrush forage to relatively minor levels (20 percent) by GRA; although, strong localized reductions in suitable sagebrush forage could still be experienced on clear winter range and pronghorn overall range.

Proposed woodland treatments may optimize cover distribution and increase forage area extent at levels equal to Alternative B. Similarly, cover retention guidelines would not prevent cover deficient conditions, but in contrast, cover deficient habitat would retain a minimum 30 percent effective cover, and affect an average 2 to 4 percent less acreage.

Conditional public land grazing within SWAs would serve to improve or maintain wildlife habitat values. Failure to manage accordingly would result in revocation and reversion to the Alternative A option.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternative A

Horses compete with deer and elk for herbaceous and woody forage on all seasonal ranges, but authorized use within the herd management area (HMA) (about 6 percent of total allocated use) has been integrated in a multiple use context. Because of inconsistent control, horse populations periodically exceed authorized numbers by 200-300 head and increase cumulative grazing loads within he HMA by 10 to 15 percent. The HMA coincides with about 15 percent of the general deer winter ranges in the Douglas/Cathedral and Piceance GRAs and 16 to 17 percent of Piceance GRA's summer ranges and critical deer severe winter range.

Horses have expanded their range to include large expanses of big game habitats, including 49 percent of general winter range, 35 percent severe winter range and 14 percent critical summer range in the Douglas/Cathedral GRA. Horses currently occupy an additional 6 to 8 percent of general winter and critical severe winter range and 3 percent summer range in the Piceance GRA. Year-round forage use by additional horses increases cumulative forage consumption levels by 10 to 20 percent and detracts from vegetation improvements realized from reduced numbers of livestock and big game.

It is likely that horses exert influences on deer (particularly on winter ranges) similar to those expressed for coincident elk use. Horses use the same southerly aspects and woody forages required by deer during the winter and early spring months. Because of deer's strong home-range fidelity, they are incapable of seeking new forage sources once available

supplies are reduced or exhausted by more transient bands of horses. Particularly at higher densities, horses can make substantial year-round forage use on lower elevation winter ranges on which seasonal big game populations depend.

Alternative B

Horse use would remain coincident with about 15 percent of GMU 21 and 22's deer winter range extent (including 16 percent of GMU 22's critical severe winter range habitats), reducing respective involvement by 77 percent and 42 percent relative to current distribution. Horses would continue to occupy 1 percent of GMU 21's critical summer habitats and 9 percent of GMU 22's summer ranges (half of which is considered critical elk habitat), reducing respective involvement by 94 percent and 55 percent relative to current horse distribution.

Precluding horse-related influences and competitive forage use in the removal areas would reduce peak ungulate forage use intensity by 10-15 percent, help offset big game forage deficits and improve the availability of mutually-preferred forages.

Alternative C

Authorizing horse use (in the expansion areas would aggravate interspecific competition for mutually-preferred seasonal forages of big game, and the presumed antagonism between wintering deer and horses on 49 percent of the deer winter ranges and 14 percent of the critical summer habitats in GMU 21 (Douglas/Cathedral GRA) as well as on 8 percent of the severe winter range in GMU 22 (Piceance GRA).

Alternative D

Adding the Greasewood Allotment into the HMA would validate horse use on an additional 4 percent of GMU 22's general deer winter ranges and winter concentration areas and 5 percent and its total critical severe winter range habitat. The Greasewood Allotment would increase HMA extent by about 15 percent, and overall grazing intensity by the maximum allowable number of horses would decline proportionately. In either case, horse use would continue to represent about 6 percent of the total grazing load in affected allotments.

Removing horses from the West Douglas and remainder of the North Piceance Herd Areas would be most marked in GMU 21, where coincident horse use would be eliminated on nearly 50 percent of the Unit's deer winter range and 14 percent of its critical summer range habitats. In the long term, horse removal would reduce overall forage use intensity by 4 to 8 percent and would be capable of increasing plant material remaining after livestock and big game use by 2-5 percent.

In the short term, horse distribution would remain unchanged from current distribution and be the same as proposed in Alternative C.

IMPACTS FROM GROUSE MANAGEMENT

Alternative A

Limiting manipulation of suitable sage grouse nesting cover would indirectly reserve desirable sagebrush foraging areas across 30 percent of Wolf Ridge/Red Wash GRA's pronghorn ranges.

Improving herbaceous understories and riparian/wet meadow conditions on grouse nest and brood ranges would complement desirable attributes of big game summer range and would improve forage quality and availability on about 4 percent of the total summer range extent in the Piceance GRA.

Alternative B

Herbaceous forage conditions would be improved on up to 31 percent of critical elk summer range in the Blue Mountain GRA and 19 percent of Piceance GRA's big game summer range via grouse brood and nest habitat enhancement.

Alternatives C and D

Enhancing grouse brood and nest habitats (e.g., increased herbaceous cover, channel restoration) would improve herbaceous cover and forage conditions on 25-30 percent of big game summer ranges in the Blue Mountain, Danforth and Piceance GRAs, and about 15 percent of big game summer ranges in the Douglas/Cathedral and Crooked Wash/Deep Channel GRAs.

IMPACTS FROM FISHERIES MANAGEMENT

Alternative A

Current fisheries management, including Colorado cutthroat trout, would enhance riparian and bottomland communities, and improve the availability and persistence of herbaceous forage for big game during the summer months. Identified priority areas would limit benefits to, less than 3 percent of BLM's critical summer range extent in the Douglas/Cathedral GRA, and less than 1 percent, of summer range available in the Piceance GRA. The two identified impoundments in the Wolf Ridge/Red Wash GRA provides reliable pronghorn watering sources for about 7 percent of overall pronghorn range in GMU 10.

Alternatives B, C, and D

Explicit priorities (Colorado cutthroat trout) for stream and riparian improvements would be expanded such that improved availability and persistence of herbaceous forage would be realized across about 8 percent of critical deer and elk summer range in the Douglas/Cathedral and Piceance GRAs.

Benefits derived by pronghorn in the Wolf Ridge/Red Wash GRA would be identical to those discussed in Alternative A.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

Alternatives A, B, and C

No impacts

Alternative D

The influences of candidate fisheries management on big game are integral with the fisheries discussion.

IMPACTS FROM WILDERNESS MANAGEMENT

Alternative A

Wilderness designation would reserve 6 percent and 13 percent of the critical summer and general winter habitats available for deer in GMU 10, and 2-5 percent of the total deer severe winter range and elk severe and general winter range habitats available in GMU 10 from incompatible forms of surface disturbance. Because predominant big game use occurs in winter, it is unlikely that intensified non-vehicular recreation use would cause undesirable levels of big game harassment and displacement from preferred habitats.

Reverting Black Mountain, Windy Gulch and Oil Spring Mountain Wilderness Study Areas (WSAs) to multiple-use status would open 39,940 acres of essentially roadless nature to multiple use status. Attendant access networks could reduce long-term functional use of involved habitats 30-40 percent. Potential effects would be localized, but may contribute to depression of overall range capacity by 1 to 3 percent in Douglas/Cathedral and Crooked Wash/Deep Channel GRAs, respectively.

Alternative B

Wilderness designation would affect big game in a manner identical to that discussed in Alternative A. Road density limitations applied to critical habitat components in the Black/Windy and Oil Spring Mountain WSAs would limit effective long-term road densities to 1/4 to 1/2 the density potentially reached in Alternative A, with subsequent indirect habitat loss reduced by 10-25 percent.

Alternatives C and D

Wilderness management would be similar to that discussed in Alternative A, except that the Windy Gulch/Black Mountain complex would be managed as a semi-primitive, non-motorized area for public forms of land use that may

occur attendant and subsequent to mineral development. Although short-term impacts associated with development of these WSAs would continue to be capable of reducing deer capacity by up to 3 percent in GMU 11, in the long term, full range capacity would be restored.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL AND RECREATION MANAGEMENT

Alternative A

Unregulated motorized vehicle travel on 98 percent of the resource area results in indirect big game habitat loss (10-20 percent) because of avoidance-related disuse of areas within 150-300 feet of roads and harassment during periods when animals are being subjected to strong environmental or physiologic demands. In Douglas/Cathedral GRA's oil and gas fields, average effective losses approach 30-40 percent.

Restricted vehicular access on 6,260 acres in the Blue Mountain GRA (Moosehead Mountain road closure area) limits adverse influences on about 10 percent of the total critical summer elk habitat available in GMU 10. Closures on 3,090 acres of BLM inclusions within the Oak Ridge State Wildlife Area (Danforth Hills GRA) would encompass 23 percent of critical elk severe winter range and 18 percent of critical elk production areas delineated in GMU 23.

Alternative B

Road-density limitations applied primarily to big game critical habitats would stabilize current levels (10-20 percent) of effective habitat loss on 15 percent of total big game range in the resource area. Since critical habitats are considered limiting features, stabilizing or reducing habitat disuse and animal harassment would be influential in maintaining long-term range capacity and herd production and recruitment.

Alternative C

Access restrictions applied to BLM lands within the Oak Ridge State Wildlife Area would be retained and have the same influence on big game as discussed in Alternative A. Expanding the Moosehead road closure area by 2,680 acres would increase involvement of Blue Mountain GRA's big game critical summer range from 10 percent to 14 percent.

Extending road-density limitations to all big game ranges would stabilize road-related influences on big game and limit declines in habitat effectiveness (i.e., animal avoidance response) to about 30 percent across 85 percent of the resource area. The influence of proposed road-density limitations on big game critical habitats would be the same as discussed in Alternative B. In conjunction with limiting vehicle travel to designated roads and trails, these measures would effectively deter continued proliferation of roads and the consequence of road use on big game habitat utility.

Alternative D

The effects of road density limitations on big game would be the same as Alternative C. Intensifying non-motorized recreation use on Moosehead may reverse recent gains made since instituting motorized vehicle restrictions (i.e., dramatic increases in the number and longevity of elk occupying public lands through the summer and early fall). This small tract of public land encompasses 10 percent of the total critical summer habitats available to elk in GMU 10 and 45 percent of all aspen within the Blue Mountain GRA. Because of its size and the limited extent of key big game features (i.e., aspen), seasonal big game use on Moosehead Mountain is both sensitive and vulnerable to disturbance. Without some form of passive control, it is probable that recreation activity during the late spring and summer months would prompt elk movement to surrounding private and privately-controlled public lands (e.g., Luxen Draw) and aggravate elk distribution problems in GMU 10 (i.e., forage competition with livestock).

To maintain the integrity of big game (primarily elk) summer range utility on Moosehead Mountain, it would be imperative that measures to control overnight use and mechanized vehicle (bicycles) travel be incorporated. By promoting day use (i.e., shorter term and less intensive form of disturbance), animal contact with recreationists and subsequent animal avoidance response/displacement would be reduced. Proposed seasonal bike trail limitations would be equally important as a means of confining intensive use to relatively narrow corridors and providing areas of seclusion for elk during the daylight hours.

IMPACTS FROM LAND USE AUTHORIZATIONS MANAGEMENT

Alternative A

Facilities maintenance and their access requirements have in some cases compromised intended management or control in sensitive wildlife areas (critical ranges) and add incrementally to avoidance or disturbance-related impacts.

Alternative B

The Raven Ridge ACEC would be included with the Wilderness Study Areas as an exclusion area and would contribute incrementally to the maintenance of big game winter range availability and function.

The effects of maintenance activities on big game values would be the same as discussed in Alternative A.

Alternatives C and D

Adding the Moosehead ACEC and BLM tracts within the Oak Ridge State Wildlife Area as exclusion areas would promote consistent land use treatment on these inordinately high-value big game habitats.

The effects of facility maintenance activities on big game values would be the same as discussed in Alternative A.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

Alternative A

Continuing to make 1,174,100 acres of Category 2 land available for conditional exchange would require the prior evaluation of wildlife issues and concerns to alleviate or offset significant losses of important wildlife values, providing, if necessary, alternate exchange packages. Through negotiated application of special stipulations or provisions, it is thought that any acquisition would prove neutral or advantageous to wildlife, including big game resources.

Alternative B

A total of 949,900 acres of Category 2 land would be available for conditional exchange. The conditions of exchange and potential impacts on big game would be similar to those discussed in Alternative A.

Alternative C

The effects of land ownership adjustment would be similar to those discussed in Alternative B. However, retaining and supplementing the collective land base associated with the ACECs would contribute to the maintenance of big game values associated with these areas, including relatively large segments of critical deer and elk habitats.

Alternative D

The effects of land ownership adjustment would be similar to those discussed in Alternative C except for the lack of retention status granted the Texas-Missouri-Evacuation Creek ACEC. Thirteen percent of Douglas/Cathedral GRA's deer winter ranges would be retained in this alternative, rather than 21 percent retained in Alternative C.

IMPACTS FROM ACCESS MANAGEMENT

Alternative A

Continuing to disrupt wildlife by increased recreational use and intensity would be of particular concern on big game critical habitats and without adequate enforcement presence and accompanying motorized vehicle designations, applicable TL stipulations (i.e., severe winter range, production areas) would generally be considered ineffective.

Alternative B

Proposed road-density limitations would offer the same protection in the Wolf Ridge/Red Wash GRA as discussed above under Motorized Vehicle Travel Management. Proposed public access would help alleviate problems associated with seasonally concentrated big game forage use (discussed in Alternative A), particularly in the southeast corner of Piceance Basin and in the Crooked Wash/Deep Channel GRA.

Alternatives C and D

Applying road density limitations and restricting motorized vehicle travel to designated roads and trails would help stabilize the effects of land use on important big game habitats.

IMPACTS FROM WITHDRAWALS MANAGEMENT

Alternative A

Oil shale withdrawals preclude disposal by any means and have, on occasion, prevented consideration of exchange proposals which could have resulted in important consolidations of high value big game ranges.

Alternative B

Most withdrawals would be revoked availing additional lands which may be considered for exchange.

Alternative C

Modifying the oil shale withdrawal would offer opportunities to conduct exchanges advantageous to the consolidation of important big game habitats. Similarly, proposed withdrawals on the Moosehead ACEC and Oak Ridge State Wildlife Area would promote consistent land use treatment on these inordinately high value big game habitats.

Alternative D

The effects of various public land withdrawals on big game would be similar to that discussed in Alternative A. Removing public land within the Oak Ridge State Wildlife Area from withdrawal consideration would affect a number of other mineral and surface estate holders and would maintain the area's potential mineral value for possible lands actions considered by these entities, including the Colorado Division of Wildlife.

IMPACTS FROM FIRE MANAGEMENT

Alternative A

Small-scale fires up to 60 acres in the sagebrush/greasewood and pinyon/juniper types can generally be considered advantageous in maintaining the dispersion and distribution of forage and cover components for big game. Large recurring or contiguous events on lower elevation pinyon/juniper-sagebrush ranges (i.e., Little Spring Creek and the south slopes of Blue Mountain) would substantially depress habitat utility and/or forage availability in the short and long term.

Alternatives B, C, and D

More aggressive fire suppression strategies would be applied to fires that jeopardize residual woodlands in the Spring Creek/Greasewood area (Piceance GRA), which have been subjected to large, contiguous wildfire events and would minimize further long-term deterioration of late-winter habitat utility.

CUMULATIVE IMPACTS ON BIG GAME MANAGEMENT

Alternative A

Reducing deer populations by 11 percent, increasing suitable winter forage base by 28 percent, improving cover distribution on 9 percent of winter ranges, and enhancing alternate or supplemental forage conditions on 14 percent of all big game range would lead to steady, long-term improvements in woody forage vigor and condition. Under these conditions, productivity and recruitment of deer and their susceptibility to strong periodic population declines would remain static through plan life, and strong short term declines in winter range capacity would be largely averted.

Implementing few explicit habitat-related manipulation guidelines (e.g., cover or forage retention) livestock forage enhancement and woodland harvest projects may impose strong, and relatively prolonged declines in deer winter range forage capacity and limit opportunities for optimizing habitat utility/cover distribution on seasonal ranges. In the worst case, deer winter forage capacity would be reduced by up to 35 percent from optimal through and up to 20 years beyond plan life.

Improving distribution and persistence of water attributable to riparian restoration would improve habitat utility (i.e., effective extent of suitable habitat) on as much as 15 percent of total summer range available (concentrated in the Douglas/Cathedral and Piceance GRAs). Groundwater depletion attributable to mine dewatering would contribute to the loss of springs, seeps, and contributions to base flows of Piceance and Yellow Creeks as sources of big game water.

Increasing herbaceous ground cover and water availability (e.g., channel and watershed restoration activities) and improvements in the composition of early-seral shrubland communities (i.e., perennial forbs) would be expected to enhance up to 35 percent of total pronghorn range available

in the resource area. Without explicit forage retention guidelines, woody forage supplies on year-round pronghorn ranges would remain vulnerable to overall reductions of up to 35 percent.

Reducing coincident horse occupation, improving plant community composition and watershed conditions through various program objectives, increasing foraging area extent through forage enhancement measures and woodland harvest, and improving summer range utility through the implementation of riparian and watershed objectives would improve herbaceous forage available for seasonal elk use to the extent of effectively offsetting additional elk use.
Elk forage use intensity may be expected to prolong efforts to reduce grazing use intensity on herbaceous elements and, consequently, desired improvement of watershed condition and understory vegetation expression for other resource values (e.g., nongame, grouse).

Mineral development and unregulated public recreational vehicle use, would depress habitat utility across all big game ranges by an estimated 10-20 percent. Road densities and use anticipated within heavily developed oil and gas fields could depress habitat utility for deer and elk by 40-60 percent on up to 6 percent of total summer range extent and 14 percent of winter range extent, including 7 percent of severe winter ranges. With the exception of localized access-restricted areas applied to 1 percent of the resource area, there are no effective controls on future road proliferation and escalation of indirect big game impacts.

Applying severe winter range TL stipulations would help prevent acute animal harassment under the most severe winter conditions, but expire too early to effectively minimize harassment or subsequent mortality during prolonged winters or inclement springs. TL stipulations designed to enhance survival and recruitment of big game young are applied to less than 1 percent of critical summer range extent and offer no meaningful reduction in animal harassment of displacement from preferred production habitats.

Alternative B

Reducing deer population objectives, increasing suitable winter forage base, improving cover distribution, and enhancing alternate or supplemental forage conditions would lead to steady, long-term improvements in woody forage vigor and condition, but at a slightly lower level than Alternative A. Productivity and recruitment of deer and their susceptibility to strong periodic population declines would remain static throughout and beyond plan life. Improving habitat utility would offset long-term declining trends in habitat capacity from high-seral condition plant community management.

Implementing livestock forage enhancement and woodland harvest projects could impose localized declines in deer winter range forage capacity and could limit opportunities for optimizing habitat utility/cover distribution on seasonal ranges. On a GRA basis, winter forage capacity for deer would not be adversely influenced from planned manipulations.

Improving the distribution and persistence of water through riparian restoration would improve habitat utility on as much as 5 percent of total summer range available (concentrated in the Blue Mountain, Douglas/Cathedral and Piceance GRAs).

Implementing watershed, riparian and plant community objectives in the Wolf Ridge/Red Wash GRA would result in long-term improvements in Wolf Ridge/Red Wash GRA pronghorn ranges. Increasing herbaceous ground cover and water availability associated with channel and watershed restoration activities and improvements in the composition of early- and mid- seral shrubland communities (i.e., particularly perennial forbs) would be expected to enhance up to 40 percent of total pronghorn range available in the resource area. Forage retention guidelines would limit reductions in woody forage availability on year-round pronghorn range to 20 percent and are expected to prevent any overall decline in range capacity.

Elk would be affected the same as Alternative A in the short term. Increasing emphasis on managing rangelands in high-seral condition and enhancing herbaceous understory conditions would improve long-term forage conditions on up to 55 percent of all seasonal elk range. This management approach would accelerate achievement of desired grazing use, watershed, and plant community goals and both expand the effective forage base available for seasonal elk use and more quickly offset the effects of additional elk use.

Limiting road density would maintain or slightly reduce current levels (estimated 10-20 percent) of effective habitat loss about 18 percent of total big game range in the resource area. These limitations would be capable of reducing road-related effects on big game critical habitats to one-half to one-quarter the unmitigated loss in heavy development areas (i.e., oil and gas fields).

Continuing to apply severe winter range TL stipulations in the Piceance, Crooked Wash/Deep Channel, and

Danforth/Jensen GRAs would effectively minimize chronic expenditure of energy reserves throughout the period when wintering animals are most vulnerable to physiological decline. Application may extend to as much as 55 percent of the resource area's big game population. Elk production area TL stipulations would remain incapable of reducing disruption of big game production activities or disuse of preferred habitats.

Alternative C

Reducing deer population objectives by 18 percent, increasing suitable winter forage base by 20 percent, improving cover distribution on a minimum 8 percent, and improving alternate or supplemental herbaceous forage availability on 24 percent of all big game range would provide discernible improvement in woody forage vigor and condition within plan life. Improving habitat utility, derived through BLM program integration, would be additive and result in long-term improving trends in habitat condition, herd productivity and recruitment, and moderate the tendency for dramatic periodic population declines.

Integrating most land use activities through cover retention guidelines would optimize big game habitat utility on any project site, increasing the long-term availability and distribution of suitable forage and the efficiency of herbivore use. Forage retention guidelines would maintain sufficient supply and distribution of winter forages to sustain desired population levels, and provide for long-term improvement in the vigor and growth form of primary and alternate forages. Collectively, these effects would relieve excessive demands on preferred forage and reduce the influence of herbivores on understory expression. Improving the distribution and persistence of water, attributable to riparian restoration, would improve habitat utility on a minimum 5 percent of total deer summer range.

Implementing watershed, riparian and plant community objectives in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs would promote widespread, long-term improvement of pronghorn ranges. Increasing herbaceous ground cover and water availability associated with channel and watershed restoration activities and improvements in the composition of early- and mid-seral shrubland communities (i.e. particularly perennial forbs) would be expected to enhance forage quality and availability on up to 41 percent of total pronghorn range. Forage retention guidelines would limit reductions in woody forage availability on year-round pronghorn range to 10 percent and would prevent any overall decline in range capacity.

Enhancing herbaceous understory conditions and increasing forage area extent would improve forage availability on up to 45 percent of all seasonal elk range, and would be expected to exceed compensation for additional elk use within plan life. Cumulative herbaceous forage use intensity would be expected to decline slightly on up to 83 percent of elk range in the short term, but remain relatively static on the horse expansion areas.

Limiting road density would stabilize or slightly reduce current overall levels of habitat deterioration associated with permitted and general public road use on all BLM-managed lands in the long term. Applying road density goals would maintain up to 70 percent of functional big game habitat utility across a minimum 66 percent of the resource area.

Implementing TL stipulations would minimize chronic expenditure of energy reserves and displacement from preferred habitats on a full complement of ranges that fulfill special big game functions at times when animals are most susceptible to disturbance-related effects. Applications would extend to as much as 75 percent of the wintering big game population (average 40-45 percent) and would serve to maintain the functional utility on at least 42 percent of summer range extent.

Alternative D

The overall effects of big game management would be the same as described under Alternative C except that flexibility within vegetation treatments guidelines may allow strong localized reductions in the sagebrush forage base on deer winter range and year-round pronghorn range. These impacts would be short term and GRA-wide ceilings would prevent any overall reductions in range capacity.

Similarly, guideline latitude may limit opportunities for fully optimizing habitat utility to levels intermediary between Alternatives B and C (i.e., up to an additional 4 percent of winter range in cover deficient condition).

In addition, because of long-term reduction in horse distribution, herbaceous forage conditions would be expected to improve across an additional 10 percent of total range extent.

IMPACTS ON NON-T/E RAPTOR MANAGEMENT

IMPACTS FROM NON-T/E RAPTOR MANAGEMENT

Alternative A

Applying small NSO stipulations (5-10 acres) to each active raptor nest site would protect nest structures and substrate, but are incapable of maintaining habitat characteristics necessary for sustained or long-term utility of the nest site or complex, particularly for woodland dwelling raptors. Because woodlands, particularly pinyon/juniper, require prolonged periods to regain mature structural characteristics (necessary for nesting and foraging activities), canopy modifications with established nest territories are prone to exerting long term and additive reductions in the extent and availability of suitable nest and foraging habitat. Timing limitation buffer radii of 0.25 mile would be applied to most resident species, and are generally adequate to prevent undue disturbance of incubating or brooding birds, and a management framework plan (MFP) provision prohibits permanent alteration of surrounding habitat within this buffer to provide for long-term habitat maintenance.

An unspecified number and type of snags would be reserved, where appropriate, for cavity-dwelling species. Raptor electrocution (e.g., powerlines) would be minimized under current management by incorporating, where necessary, raptor protection designs during powerline construction. This commonly used form of protection is considered inferior to designs incorporating conductor separation.

Alternative B

Raptor management provisions would adequately protect ongoing nest activity and increase BLM's effectiveness in maintaining the short-term suitability and utility of woodland nest and foraging, but would remain incapable of preventing long-term declines in the availability of suitable habitat for species requiring more contiguous mature canopies.

TL buffers would be identical to Alternative A. Larger NSO buffer zones would enhance prospects for long-term maintenance of cliff site utility by preventing "off-season" encroachment. In the case of woodland nesting raptors, NSO buffers would prevent adverse canopy alterations within one-eighth mile of a nest site--about double the distance allowed in Alternative A. Preventing adverse fragmentation or removal of woodland cover and foraging habitat within 0.5 mile of woodland nest sites would maintain habitat character for sustained utility of known nest sites.

Minimizing occupancy or disturbance of forest and deciduous shrub types (e.g., aspen, spruce-fir, oakbrush) which support high raptor breeding densities, would help maintain the long-term availability of these sites for future occupancy. Snags would be retained as in Alternative A.

Raptor electrocution would be minimized as in Alternative A, but where appropriate, more effective conductor separation designs would be encouraged to virtually eliminate mortality on new or upgraded transmission lines.

Alternative C

Raptor nest stipulations and habitat protection guidelines would continue to adequately protect ongoing nest efforts and maintain nest habitat character for sustained site utility. Land uses would be modified to preclude or reduce adverse alterations to levels acceptable to BLM. Incremental decline in the availability or more continuous woodland nest and foraging habitat would continue, but inventory provisions would enhance nest detection and, together with nest habitat provisions, help minimize alteration of habitats most preferred by breeding birds.

Requiring reclamation measures to accelerate reestablishment of former plant composition rather than relying on natural reinvasion would strengthen incentive to avoid surface involvement of favored aspen and spruce-fir types.

Establishing minimum snag requirements, as applied to timber and pinyon/juniper selective harvest strategies would effectively minimize adverse effects of woodland modification on snag and cavity-dependent raptors and associated prey.

Regulating personal firewood collection would essentially preclude inadvertent alteration or disruption of nest sites. Particularly for special status species, this action would increase BLM's effectiveness in protecting raptor nest activities under various laws and regulations.

Use of transmission facility design which provide adequate conductor clearance (as discussed in Alternative B) would be promoted where necessary to protect perching raptors.

Alternative D

Raptor management would differ little from that presented in Alternative C.

Requiring surveys when 100 acres or more of potential nest habitat may be affected by surface disturbance and encouraging 1 full nesting sequence for investigation would provide effective protection on up to 60-70 percent of permitted surface-disturbing activities. BLM would remain responsible for conducting inventories within standard approval timeframes on smaller permitted projects and all BLM-implemented treatments. It is likely that developments that fail to receive desirable forms or levels of survey coverage would occur where disruption of subsequent or ongoing nest efforts would be of lesser consequence in the context of maintaining overall breeding bird production.

IMPACTS FROM SOILS, SURFACE WATER, GROUND WATER, AND WATER RIGHTS MANAGEMENT

Alternatives A and B

Improving or restoring riparian or channel systems, soil productivity and upland vegetation (e.g., herbaceous ground cover) would contribute to the long-term enhancement of up to 50 percent of the low elevation sagebrush/saltbush habitats in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs most notably occupied by ferruginous hawk, prairie falcon, and burrowing owl.

Measures protecting groundwater would help minimize loss or deterioration of base flows which are necessary to develop, maintain, or enhance riparian and wetland communities as important features of woodland raptor nest and foraging habitats.

Securing water rights on appropriate streams and impoundments would help ensure that water sources which occur or are developed on federal land are retained and remain available to maintain the suitability of raptor nest and foraging areas associated with riparian systems.

Alternatives C and D

Watershed protection and improvement would have the same influence on raptor habitats as in Alternatives A and B, but would be expanded to include up to 65 percent of the low-elevation sagebrush/saltbush habitat in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs.

IMPACTS FROM OIL AND GAS MANAGEMENT

Alternative A

Developing oil and gas in close proximity to nests during incubation and nesting phases would typically disrupts or fails ongoing nest efforts, and alteration in habitat character can render sites unsuitable for nesting activities in the long term.

Applying NSO and TL stipulations provide adequate protection of current year nest attempts for all species and is largely successful in maintaining the long-term utility of buteo, eagle, falcon and harrier nest habitats.

Direct loss or modification of buteo, eagle, falcon and harrier habitats (predominantly cliff dwelling and ground nesters) attributable to long-term facility occupation ranges from 6 to 8 percent within established fields, and is small on a GRA-wide basis (maximum 3 percent in Douglas/Cathedral GRA). Projected in-field development would increase by an average 55 percent such that at full field development 10-23 percent of within-field habitats would be modified (maximum 4 percent in Douglas/Cathedral GRA).

However, stipulation application is generally incapable of maintaining the short- or long-term integrity of woodland raptor nest habitats. NSO stipulations allow adverse canopy modification within 250 feet of woodland raptor nest and can exert long-term, additive reductions in the extent of suitable woodland raptor nest and foraging habitat. Oil and gas development impacts on woodland-dwelling raptors would be most influential in the Douglas/ Cathedral and Piceance GRAs, where an estimated 7 to 9 percent of woodland nest and foraging habitat has been cleared within established fields. Over the next 20 years, full scale oil and gas development would modify an additional 3 to 5 percent of in-field woodland habitat, representing 9 and 2 percent of all woodland habitats within the Douglas/Cathedral and Piceance GRA, respectively.

Mortality of raptors from entrapment within, or ingestion of fluids from oil and gas reserve and production pits would be minimized by flagging/wireover requirements. Raptor electrocution is minimized by incorporating the most current raptor protection designs in electrical transmission facility construction.

Alternative B

Oil and gas development would remain unchanged from Alternative A but impacts would differ due to the incorporation of lease stipulations from the Colorado Oil and Gas EIS and more focused consideration of important features and components of raptor habitats.

Direct loss or modification of buteo, eagle, falcon and harrier habitats attributable to long-term facility occupation and habitat conversion would remain small, and the loss of foraging habitat would be somewhat reduced from that described in Alternative A.

Expanded NSOs (1/8 mile radius, 30 acres) and siting surface disturbance to minimize adverse modification of nest habitat character would generally be adequate to effectively separate disruptive oil and gas-related influences from the immediate nest vicinity and maintain the integrity of known woodland raptor nest territories for extended periods.

Applicable TL stipulations (virtually identical to Alternative A) would continue to remain in effect only during project construction and would provide effective protection to raptor nest functions during the ongoing nesting season. Occupied and potential nest habitats coincident with big game critical habitats would involve up to 20 percent of pinyon/juniper habitats and 80-90 percent of aspen and coniferous forest habitats. These nest habitats would gain indirect benefit by road redistribution and/or density reductions, and reducing potential exposure of undiscovered nesting pairs to road-induced activity.

Emphasizing conductor separation, rather than installing deterioration-prone perch deterrent devices on electric transmission facilities, would enhance long-term protection of raptors from electrocution. Production pit mortality would be minimized as in Alternative A.

Alternative C

Oil and gas development and its effects on raptor habitats would be similar to Alternative B.

Requiring project proponents to assume responsibility in conducting raptor nest inventories would increase timely survey coverage, enhance effective use of available stipulations, and ultimately assist BLM in realizing goals of maintaining the utility of raptor breeding habitats protecting ongoing reproductive activities.

Expanding road density limitations (see Big Game Management) would stabilize potential road-related effects on raptor nesting activities and habitat suitability. Outside big game critical habitats, the overall 3.0 mile/square mile road density provision would be capable of reducing long-term road densities in established oil and gas fields by 50 percent or more.

Alternative D

The only difference between this and Alternative C's effects on raptor management involves modification to the inventory requirement. Implementing the modified inventory strategy would provide acceptable nest surveys on about 60-70 percent of the woodland habitats affected by oil and gas. It is likely that developments that fail to receive desirable forms or levels of survey coverage would involve less intensively developed fields or isolated wildcat wells, where disruption of nest efforts would be of lesser consequence in the context of maintaining overall breeding bird populations.

IMPACTS FROM OIL SHALE MANAGEMENT

All Alternatives

Developing oil shale on 50,000+ acres would cause long-term rest and foraging habitat losses for all breeding raptors. Pinyon/juniper habitats would be reduced by about 10 percent in the Piceance GRA, or 5 percent resource area wide. Buteo hawk and golden eagle nest territories encompassing extensive open pit or disposal areas would be vulnerable to abandonment.

IMPACTS FROM SODIUM MANAGEMENT

Alternative A

Application of TL and NSO stipulations to protect current year raptor nesting functions would be adequate to protect current year nesting functions. Full field development of all current sodium leases would involve the long-term removal or deterioration of up to 1,000 acres (0.3 percent) of the GRA's suitable pinyon\juniper breeding or foraging habitat.

Alternatives B, C, and D

Sodium-related impacts to raptors are similar to those discussed in Alternative A.

With advance survey information on woodland raptor breeding activity, application of expanded or enhanced raptor TL and NSO stipulations would fully protect current year nesting functions and short-term nest habitat utility. Application of the nest habitat provision, designed to help maintain the long-term availability of woodland raptor nest and foraging habitats, may not be entirely workable in these mining situations.

IMPACTS FROM COAL MANAGEMENT

All Alternatives

Application of coal unsuitability criteria (1981 MFP Coal Amendment) would maintain nest an foraging habitats associated with about half the raptor nest sites (151 of 325) known to occur int eh coal study areas. Ten ferruginous hawk, 80 red-tailed hawk, 36 golden eagle, 21 accipiter (primarily Cooper/s hawk), and 3 prairie falcon sites occur in areas suitable for surface mining.

Land use objectives and stipulations often cannot reasonably be applied to surface mining operations and raptor values are usually compensated to mutually acceptable degree (e.g., BLM, Colorado Division of Wildlife (CDOW, USFWS)) through special lease stipulations. Nesting substrate and habitat of those raptors not considered in the unsuitability criteria or law (especially owls and accipiters) remain vulnerable to loss or adverse modification.

Although prey populations may be depressed for a period after mining, buteo hawks and eagles would be capable of exploiting available prey soon after reclamation. Use by woodland adapted species would be foregone for extended periods of time. Woodland restoration is prolonged and, in many cases, extensive reestablishment of these components is not considered feasible.

Although not forecasted, any surface mine activity in the Danforth Area would likely involve aspen and mixed brush communities occupied by woodland dwelling raptors (e.g., northern goshawk, Cooper's hawk, pygmy and flammulated owl). Over 9,000 acres of preferred aspen nest substrate (primarily private surface), of 81 percent of that in the Danforth Study Area, remains subject to surface mining.

In the Rangely Study Area, pinyon\juniper habitats subject to long-term modification represents about 15 percent of woodlands available in the Wolf Ridge/Red Wash GRA and about 5 percent of those in both the Piceance and Douglas/Cathedral GRAs (about 5 percent resource area wide). About 9 percent of the resource area's ferruginous hawk and burrowing owl habitat remains vulnerable to surface mining. Compatible post-mine land use objectives and reclamation would abbreviate the longevity of impacts imposed on shrubland/herbaceous habitats required by these species such that impacts could be reduced to minor proportions in the long term.

The full range of raptor-related land use decisions (TL and NSO stipulations) are normally applicable to ancillary facilities underground mining operations, and would be sufficient to minimize or compensate impacts on raptor nesting activity to the satisfaction of BLM, CDOW and USFWS.

IMPACTS FROM MINERAL MATERIALS MANAGEMENT

Alternative A

Sand and gravel areas include 30 acres of federally-administered riverine cottonwood habitats, which represent 44 percent of total riverine cottonwoods available on BLM estate within the resource area, but only 3 percent of all cottonwood communities available on the White River.

Prohibiting activities that reduce the quantity or quality of riverine woodlands as bald eagle habitat aid in maintaining mature cottonwood galleries as woodland raptor habitat, but this measure fails to account for the development and long-term availability of the cottonwood type. Gravel mining and subsequent reclamation on non-wooded floodplain sections would offer opportunities to create or promote riparian communities where none previously existed, potentially increasing habitats suitable for nesting, migratory and wintering populations of accipiters and several species of owl. Available NSO and TL stipulations would effectively protect raptor nesting activities.

Alternative B

Proposed stipulations and nest habitat objectives would maintain short-term integrity of occupied cottonwood stands for woodland raptor use and promote maintenance of long-term site potential. These measures would remain incapable

of preventing incremental decline in the long-term availability and suitability of cottonwood habitats.

Alternatives C and D

Implementing a CSU stipulation in the White River ACEC, designed to protect and maintain riverine riparian associations, would essentially preclude involvement of riverine nest and foraging habitats, and allow for continued development and expansion of these habitats. Raptor nest stipulations would continue to prevent disruption of current year nest efforts from mine-related activities.

Shifting development emphasis to floodplain or terrace situations devoid of riparian vegetation would provide opportunities to create or promote development of riparian communities where none previously existed.

IMPACTS FROM HAZARDOUS MATERIALS MANAGEMENT

All Alternatives

Removing and/or preventing hazardous material releases would have the obvious benefit of minimizing potential direct mortality or adverse effects on reproductive or behavioral function.

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

Alternative A

Improving ranges or woodlands from early-seral condition to conditions which more closely reflects natural community characteristics would be desirable and consistent with long-term raptor management. Improving herbaceous ground cover and diversity and opening closed shrub canopies, would enhance forage opportunity across about 5 percent of managed shrubland types for wintering and breeding buteos and eagles (e.g., ferruginous hawk and golden eagle) in the long term, and would contribute to the maintenance of local populations.

Treatment of encroaching pinyon/juniper woodlands would target stands younger regeneration (trunk diameters of 8 inches or less) which provide little roost or perch substrate and appears to support inferior prey populations. Older age classes typically possess heavy and intermingled tree and shrub canopies which provide suboptimal foraging or nesting conditions for most woodland dwelling species. Although unlikely that conversion represents a reduction in historic woodland habitat, disallowing woodland maturation on up to 28,000 acres of encroachment may limit opportunities to offset reductions in habitat attributable to mature canopy manipulations (in excess of steady state rotation) or woodland conversions (long-term surface occupation).

Maintenance of disclimax brushlands would enhance the forage utility of this land base for wintering and resident buteos and eagles. Open ranges suited for winter foraging use by such species as rough-legged hawk would increase by about 10 percent for up to 50 years. Although breeding buteos and eagles whose territories encompass project locales may enjoy slightly improved reproductive success, overall population levels would remain static.

Improving woodland habitats through long-term canopy modifications would be integral with the woodland, timberland, wildlife (big game), and livestock grazing programs, and are discussed under those sections.

Alternative B

Improving herbaceous expression beneath shrub canopies in the short term, and opening closed shrub canopies in the longer term, would be expected to enhance foraging opportunity across 41 percent of shrub and grassland types for wintering and breeding buteos and eagles.

Woodland understory components would be enhanced without compromising dominant canopy structure on about 35 percent of the pinyon/juniper base, and would be conducive to a more diverse assemblage of prey available to woodland dwelling raptors.

Raptor and associated prey response to communities progressing from mid to high-seral condition would be less pronounced than improvements applied to early-seral ranges, but because of widespread application, it is reasonable to predict long-term, broad-based benefits to these groups.

Alternatives C and D

The effects of plant community management on raptor nesting and foraging habitat would be the same as Alternative B except woodland objectives would be modified such that canopy conditions associated with mid-seral stages would be explicitly reserved where necessary to maintain the suitability of woodland raptor nest habitats.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Enhancing riparian areas may dramatically improve or create habitat for several species of owls, accipiters, and the northern harrier, as long as the system possesses the potential to develop vegetation forms amenable to raptor occupation. Riparian-oriented management would enhance breeding and wintering habitats for raptors on about 2 and 30 percent of those habitats available in the Piceance and Douglas/Cathedral GRAs.

Alternative B

Directed management of high-priority riparian systems would expand the potential extent of raptor-related benefits to 40-50 percent of riparian acreage available in the Crooked Wash/Deep Channel and Blue Mountain GRAs, and increase riparian involvement in the Douglas/Cathedral and Piceance GRAs to 85 percent and 58 percent.

Alternatives C and D

Maintaining or enhancing nest and foraging habitat for a variety of raptors associated with riparian and woodland habitats would be expanded to include medium-priority systems and would extend raptor-related benefits to 80-90 percent of riparian acreage available in all GRAs, with the exception of Blue Mountain GRA which would involve about 50 percent.

IMPACTS FROM SPECIAL STATUS PLANTS AND ACEC MANAGEMENT

Alternatives A and B

No impacts

Alternative C

Applying ACEC-wide NSO stipulations would reserve 2-3 percent of potential pinyon/juniper foraging and nest habitat available in the Wolf Ridge/Red Wash and Piceance GRAs from the influences of long-term modification.

Additionally, 710 acres of spruce-fir in the Douglas/Cathedral GRA (2 percent GRA-wide) and about 520 acres of aspen in the Blue Mountain GRA (48 percent GRA-wide) would be reserved from adverse surface occupation or disturbance. These communities are considered preferred habitat for woodland-dwelling raptors.

NSO stipulations applied to riverine riparian communities within the White River ACEC would help promote the long-term development and continued availability of raptor nest and foraging habitat on about 120 acres of BLM-administered lands along the river.

Alternative D

Reservation of important woodland raptor nest and foraging habitat gained through NSO application would involve spruce-fir, aspen, and cottonwood habitats at the same level as Alternative C. However, plant protection stipulations would not provide for reservation of pinyon\juniper habitats in the Wolf Ridge/Red Wash and Piceance GRAs.

IMPACTS FROM TIMBER AND WOODLAND MANAGEMENT

Alternative A

Harvesting commercial timber would involve 60 percent of the spruce-fir type and would be confined to the Piceance and Douglas/Cathedral GRAs.

Harvesting on a 100-year rotation would result in long-term conversion of these stands to a relatively young age class with even-age characteristics. Since more important raptor-related roles in this timber type occur at mature to over-mature states (in excess of 100 years) cavity and suitable canopy development would be extremely limited on this rotation. Adequate protection of ongoing nest activity and short-term maintenance of nest habitat suitability and utility would be gained through application of stipulations and/or nest habitat objectives following nest inventories of harvest areas.

Commercial harvesting of timber over the long term (100 years) would preclude opportunities for expansion or development of habitat suitable for birds requiring mature to over-mature, multi-story canopies, including the northern goshawk. Approximately 44 percent of all similar habitat occurring in the area would be rendered suboptimal and would likely depress long-term nesting and foraging capacity by 45-65 percent.

Harvesting more productive stands of pinyon/juniper woodlands (stands usually more amenable to commercial harvest) would reduce the long-term availability of preferred foraging and nest habitat for woodland-dwelling raptors. Applying NSO and TL stipulations to harvest operations protects current year production of woodland nesting raptors. The nest habitat provision maintains the integrity of most woodland nest sites in the short term, but fails to account for long-term woodland succession or woodland modifications adverse to future nest or winter foraging habitats.

Implementing a prescribed rotation age of 200 years would be inadequate for achieving mature/overmature canopies or cavity development required by many woodland-dwelling raptors and their prey (e.g., bushy-tailed woodrat, northern goshawk, ash-throated flycatcher), mainly because harvest treatments (e.g., slash burning, juniper felling) and the lag time (up to 50 years) between clearcutting and full stocking of seedlings prevent immediate regeneration. In the short term (life of plan), 10 percent of the resource area's commercial pinyon/juniper base would be rendered unsuitable for use by woodland raptors and the associated prey base, while in the long term (rotation age) the entire commercial base would largely be reduced to a sub-200 year age class, effectively reducing habitat capacity for mature canopy obligates by as much as 40 percent.

Approximately 66 percent of the commercial base would be harvested from the Douglas/Cathedral GRA, about 12 percent in both the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs, and 4 percent from both the Danforth and Piceance GRAs. Relative loss by GRA in the long term would remain small in the Piceance GRA (2 percent), but average 45 percent in the Crooked Wash/Deep Channel and Douglas/Cathedral GRAs, and 64 percent in the Wolf Ridge/Red Wash and Danforth/Jensen GRAs.

Modifying one quarter of the resource area's most productive and well developed pinyon/juniper habitat would precipitate unavoidable and significant declines in the abundance and distribution of species associated with northwest Colorado's mature pinyon/juniper communities. Assuming harvest areas would retain suitable open-area properties for 50 years post-cut, about 42,000 acres would be made suitable for foraging buteo hawks and eagles. This figure represents a 6 percent increase in non-forested types within the resource area.

Alternative B

Commercial timber harvesting would influence raptors in the same manner as Alternative A, but would involve about 2 percent of the area's spruce and fir communities and reduce the long-term availability of foraging and nest habitat of timber-dwelling raptors and their prey by up to 5 percent.

Eighty percent (320 acres) of timber harvest would occur in the Piceance GRA. Small annual harvest increments (14.5 acres) would allow thorough raptor nest inventory. Application of stipulations and nest habitat objectives would adequately protect and maintain short-term nest habitat suitability and utility.

Inclusion of aspen in a commercial harvest program would result in impacts similar to those for the coniferous forest types. The influence of commercial harvest on the long-term availability of aspen raptor nest and foraging habitat may be considered locally significant in the Danforth/Jensen GRA, where 35 percent of the aspen base in this GRA would be subject to harvest.

Personal-use cutting of 50 cords of oakbrush per year may deplete an extremely limited supply of arboreal oakbrush motts (approximately $\geq$5" basal diameter), which provide unique nest substrate and canopy structure/cavity substrate for many raptors and associated prey species.

In the long term, harvesting of pinyon/juniper habitats would be equitably distributed between and involve 25 to 30 percent of suitable raptor habitat in the Douglas/Cathedral and Piceance GRAs. Clearcut rates in these GRAs would be reduced by 50 percent and the rotation age extended to 300 years, but the total extent of canopy modification (i.e., selective cut acreage) would be double that of Alternative A. Woodlands would be unsuitable for nesting by mature canopy obligates after selection cutting, but would remain adequate for more generalized prey species at reduced diversity and population levels. Snag retention would be more effective in minimizing adverse effects on cavity dwelling species and prey (e.g., mountain bluebird) in selection cut areas.and would tend to offset any net gain in prey availability. Raptor nest stipulations and treatment restrictions within 0.25-0.5 mile of woodland raptor nest sites would be sufficient to maintain the integrity of known nest territories for extended periods, but as the rotation schedule matures, harvest would impinge increasingly on the

available extent of suitable habitats. Through rotation, harvest areas composed of sub-200 year trees would involve 16 percent of the suitable woodland base area-wide, effectively reducing nest habitat for mature canopy obligates by 25 percent. Effective habitat reductions for more generalized pinyon/juniper associates would probably not exceed 15 percent.

Alternatives C and D

Harvest of spruce-fir would incorporate raptor-oriented design features and objectives (e.g., diverse structural properties, contiguous mature canopies) and would potentially involve 3 percent of BLM's timber types. Harvest would have no rotation prescription, would not be confined to specific GRAs, and would not be expected to adversely influence the long-term utility of raptor nest and foraging habitats. Harvesting small annual harvest increments would continue to allow thorough nest inventory prior to harvest and would effectively prevent disruption of ongoing nest activity or short-term deterioration in nest habitat suitability.

Proposed snag-retention objectives would minimize the effects of harvest on cavity-dwelling species in the period 20-30 years post-harvest to insignificant levels. Aspen harvests employing these management objectives would tend to enhance long-term nesting and foraging properties for cavity-dwelling raptors and prey species.

Personal-use cutting of oakbrush would be reduced to 20 cords per year.

Applying stipulations and treatment restrictions within 0.25-0.5 mile of raptor nest sites would be sufficient to maintain the integrity of known nest territories in the short term but as the rotation schedule matures it is suspected that harvest would reduce the available extent of suitable habitats.

The effects of commercial woodland harvest on raptor habitats would be similar to that presented in Alternative B, but annual harvest objectives would be reduced by about 80 percent. In the long term, harvest areas composed of sub-200 year trees would involve about 4 percent of the resource area's suitable nest and foraging habitat, and effective loss of habitat would be limited to about 5 percent for mature canopy obligates and less than 3 percent for more generalized pinyon/juniper associates.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternative A

Implementing the primary objective of the Grazing EIS would increase the vigor, abundance and availability of herbaceous forage in the interest of improving watershed conditions and reducing the intensity of ungulate grazing influences. Well developed vertical distribution of vegetation is essential for maintaining or enhancing conditions necessary to sustain the variety and abundance of prey required by all raptors.

Reducing pinyon/juniper canopies would decrease habitat suitable for woodland raptor foraging and future nesting functions by about 1 percent. Long-term reductions in the habitat base would average 1-2 percent in the Crooked Wash/Deep Channel, Piceance and Douglas/Cathedral GRAs, and about 4 percent in the Blue Mountain GRA. These effects would persist until reestablishment of mature woodland canopies (minimum 150 years post-treatment). Designating raptor nest NSOs and the nest habitat provision (1/4 mile radius around active sites) would maintain the integrity of known woodland raptor nest sites in the short term, and reserve up to 126 acres of surrounding woodland for longer term nest and foraging functions.

Alternative B

The effects of livestock management on raptors would be similar to that discussed in Alternative A.

The extent of woodland manipulations would be the same as described under Alternative a but would be influenced by big game cover objectives. The objectives would tend to distribute shrub and grassland types more uniformly through the area, and focus efforts on larger or more contiguous woodland tracts. Conversely, woodland stands of up to 800 acres in size could qualify for maintenance under the distribution criteria.

Raptor nest stipulations and treatment restrictions within 0.25-0.5 mile of woodland raptor nest sites would be sufficient to maintain the integrity of known nest territories in the short term, and would be capable of reserving up to 500 acres of surrounding woodland for longer-term nest and foraging functions.

Alternative C

The effects of livestock management on raptors and the application of raptor stipulations would be similar in most respects to that discussed in Alternative B.

Modifying vegetation treatments for big game values would distribute shrub and grassland types more uniformly through the area's woodlands and treatments would continue to be emphasized in larger, more contiguous woodland tracts. Big game cover objectives would limit the maximum size of contiguous woodland stands to about 500 acres. Woodland stands remaining after treatments would likely be smaller in size and more fragmented than in Alternative B. It remains uncertain whether big game objectives would aggravate woodland fragmentation to the detriment of more specialized woodland dwelling species or simulate natural vegetation patterns.

Alternative D

The effects of livestock management on raptors and application of raptor stipulations would be similar in most respects to that discussed in Alternative B.

Vegetation treatment design, as modified by big game objectives, would tend to distribute shrub and grassland types through the area's woodlands at levels comparable to Alternative B. Implementing big game cover objectives would tend to increase the maximum size of untreated woodland stands to about 800 acres following treatment.

By directing woodland manipulations at mature canopies, livestock forage enhancement practices would reduce the extent of potentially suitable habitat available for subsequent raptor foraging and nest functions by 1 percent, but it is likely that the long-term capacity of these woodlands to serve as suitable woodland raptor habitat would be somewhat greater than in Alternative C.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternatives A and B

Horse management and its influence on raptor prey and habitat would be similar in nature and additive with the grazing-related effects of livestock and big game. Maintaining horse numbers at the desired level within the HMA (involving about 15 percent of the Piceance and Douglas/Cathedral GRAs) and removing horses from the herd areas would reduce peak grazing loads by 10-15 percent, aiding in the development and maintenance of vegetation components necessary for improving raptor prey diversity and availability. There would be an additional 4 percent reduction in peak grazing land under Alternative B.

Alternative C

The influence of horse management on raptor prey base and habitat would be similar to Alternative A, but the validation of horse use in the herd areas would contribute an additional 10-15 percent to the total grazing load across an additional 25 percent of the Piceance and Douglas/Cathedral GRAs. Expanding horse distribution and use would detract from vegetation improvements that promote a stable and diversified raptor prey base.

Alternative D

In the short term, horse distribution would remain unchanged from the current situation (see Alternative C). The influence of horses on vegetation within the original HMA boundaries would be indistinguishable from that currently authorized (i.e., about 3 percent herbaceous production). Authorizing horse use within the Greasewood Allotment would involve an additional 4 percent of raptor habitats available in the Piceance Basin, where up to 4 percent of herbaceous production would be used by horses (i.e., 8 percent of ungulate forage use). With a revised HMA, authorized horse occupation would be expanded to include about 17 percent of the Piceance and Douglas/Cathedral GRAs.

Vegetation removal attributable to horses in the West Douglas and remainder of the North Piceance Herd Areas would persist at reduced levels for up to 10 years. Forage use would decline from an average of about 6 percent to 3 percent of herbaceous production. In the long term, horse removal from these Herd Areas would reduce overall forage use intensity across 24 percent of the Douglas/Cathedral and Piceance GRAs by 4 to 8 percent and would be capable of increasing plant material remaining after livestock and big game use by 2-5 percent.

Removal of horses would contribute incrementally to reductions in forage use intensity and improved understory expression--a key determinant in the condition and capacity of habitats to support raptors and their prey base.

IMPACTS FROM BIG GAME

MANAGEMENT

Alternative A

Big game management affects raptor habitats in manners similar to livestock and wild horses. Big game's influence on raptor habitat is prevalent and most pronounced on late winter ranges where concentrated use by deer make heavy demands on browse beneath pinyon/juniper canopies. Particularly during severe winters, cumulative ungulate use depresses vigor and reproduction of deciduous browse and subsequently suppresses subdominant expression and the woodland's structural complexity.

Treating vegetation to reduce forage use levels and improve the vigor of deciduous browse is consistent with broad-scale, long-term enhancement of raptor foraging and nesting habitats. Improvements to herbaceous cover (e.g., cover and forage for granivorous birds, small mammals) and shrub expression (e.g., nest and foraging substrate for insectivorous birds) enhances the capability of any community to support a varied and sustained prey base.

Habitat improvements are effective in enhancing certain habitat components in the long term, but vegetation manipulation can reduce the extent of suitable habitats for extended periods. Habitat improvements prescribed in the Piceance Basin Habitat Management Plan involve canopy removal of 41 percent of aspen, spruce, and fir types. Harvesting these limited and highly preferred forest habitats would severely reduce the availability of foraging and future nesting habitats for cavity and woodland-dwelling raptors and their associated prey base in the long term.

Pinyon/juniper manipulation targets would be additive to those associated with livestock forage improvement and woodland harvest. Treatment of mature canopies would reduce the long-term availability of habitats suitable for woodland-nesting raptors and associated prey by 1 percent in the Danforth/Jensen GRA and 4-5 percent in the Douglas/Cathedral and Piceance GRAs (3 percent of total available area-wide).

Alternative B

The short-term effects of big game grazing on raptors and their prey base would be similar to those discussed in Alternative A.

Sustaining elevated big game populations would result in little improvement in understory expression in the short term, and it is likely that current woodland raptor habitat conditions would remain static. A trend toward decreased browse use on winter ranges in Blue Mountain, Crooked Wash/Deep Channel and Piceance GRAs should be evident, considering the reductions in deer population objectives. Attendant increases in browse vigor would be expected to enhance understory expression beneath woodland canopies and improve the overall suitability of these habitats as woodland raptor foraging and nesting habitat in the long term.

Habitat improvements would be heavily integrated with the livestock and forestry programs. Manipulating a maximum 3 percent of BLM's spruce and fir and up to 6 percent of aspen types in manners which improve age-class distribution in small, dispersed units would not affect the integrity of occupied nest habitats and should maintain or enhance the long-term suitability and extent of nest and foraging habitat.

Implementing big game objectives would tend to disperse woodland manipulations more uniformly across the area, but would also serve to retain about 40 percent of woodland cover within project locales (1 mile radii). Flexibility within big game cover retention objectives allow reservation of woodland tracts of up to about 800 acres.

Alternative C

The effects of big game grazing on the habitats and prey base of raptors would be similar to that discussed in Alternative B. Under revised big game population objectives, overall grazing use and its effects on understory development within shrubland and woodland habitats would be reduced to a measurable degree only in the Douglas/Cathedral GRA (13 percent). As big game habitat objectives become implemented and enhanced big game habitat utility is achieved, it is anticipated that shrub expression beneath woodland canopies would slowly improve over the long term in response to improved community conditions.

Increased dispersion of woodland manipulations (same level as Alternative B) would tend to reduce the maximum potential size of woodland tracts retained in project areas (500 acres) and may tend to aggravate the effects of fragmentation across the area's pinyon/juniper ranges.

Alternative D

The effects of big game grazing on the habitats and prey base of raptors would be the same as discussed in Alternative C. Big game habitat improvement projects and cover distribution objectives would influence raptor habitats the same as described under Alternative B.

Reducing the dispersion requirements for woodland manipulations would tend to increase the maximum potential size of woodland tracts in project areas to 800 acres, and may be more conducive to the maintenance of canopy characteristics required by more specialized woodland dwelling raptors (e.g., northern goshawk).

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

All Alternatives

Protecting special status wildlife habitat and activity (e.g., bald eagle, black-footed ferret) would serve to maintain a number of specialized habitats for breeding and wintering raptors. Minimizing or offsetting disruption of habitats occupied by prairie dogs would help to maintain habitat components considered essential for the resource area's entire burrowing owl and ferruginous hawk populations. Prohibiting activities which detract from the suitability or utility of riverine bald eagle habitats would reserve existing cottonwood stands highly preferred by a number of breeding, migrant and wintering woodland-dwelling raptors.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL AND RECREATION MANAGEMENT

Alternative A

Leaving 98 percent of the resource area open to unregulated motorized vehicle travel with no area-specific controls during sensitive wildlife timeframes, nor limitations on the proliferation of primitive roads or trails from off-road travel, would exert subtle influences on raptor breeding attempts. Assuming raptors tend to locate nest sites >100 yards from road-related influences, average road densities of 1.5 miles per square mile would reduce potential nest habitat extent up to 10 percent. At road densities greater than 4 miles per square mile, indirect habitat loss may exceed 25 percent.

Alternative B

Implementing proposed road-density limitations would stabilize road networks on up to 15 percent of the resource area, thus precluding continued road-related deterioration of nesting conditions, particularly for woodland-dwelling raptors occupying higher elevation pinyon/juniper woodlands, aspen and spruce-fir. Road-density limitations applicable to the ferret recovery areas encompass 50 percent of nest sites and 28 percent of the total breeding habitats of ferruginous hawk.

Maintaining roadless conditions in the Bull Canyon/Willow Creek/Skull Creek WSA complex would contribute to the maintenance of optimal nesting conditions for associated raptors.

Restricting motorized vehicle travel in the Moosehead Mountain area would ensure maintenance of the optimal nesting utility on 500 acres or 45 percent of the relatively unique aspen habitat available in the Blue Mountain GRA)

Concentrated recreation use during the raptor breeding season would significantly reduce nest utility on up to 50 percent of BLM's riverine cottonwood habitats within the Lower White River ERMA. However, BLM lands within the ERMA constitute only 3 percent of all cottonwood habitats available on the White River.

Alternatives C and D

Restricted access and road-density limitations proposed in this alternative would contribute indirectly to the long-term maintenance of nest habitat suitability and utility be similar to Alternative B, but would stabilize road densities on up to 85 percent of the resource area. In the long term, these objectives would allow road density reductions of 50 percent or more in oil and gas development areas, which could restore up to half the habitat utility potentially lost during development.

Closures applied to the Oil Spring ACEC would maintain the utility and long-term integrity on a small (2 percent) portion of the spruce-fir habitat available in the Douglas/Cathedral GRA.

Removing ERMA status from the lower White River may reduce the intensity of summer recreation use along the river and minimize deterioration of nest habitat utility

attributable to use levels in Alternative B.

IMPACTS FROM LAND USE AUTHORIZATIONS MANAGEMENT

Alternatives A and B

The bulk of land actions would be integral with oil and gas development. Impacts are discussed under that action. All approvals are subject to applicable raptor stipulations.

Alternatives C and D

Excluding right-of-way issuance on Moosehead ACEC and BLM tracts within the Oak Ridge State Wildlife Area would be consistent with NSO stipulations proposed for these areas. With the exception of about 30 acres within the Moosehead ACEC, 40-50 percent of favored aspen nest and foraging habitat available in both the State Wildlife Area and Blue Mountain GRA would be exempt from surface occupation or disturbance.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

Alternative A

Continuing to make 1,174,100 acres of Category 2 lands available for conditional exchange would require wildlife issues and concerns to be evaluated on a case-by-case basis, and if necessary, alternate disposal packages to alleviate or offset significant losses of important values would be identified.

Alternative B

A total of 949,900 acres of Category 2 land would be available for conditional exchange (a decrease of 224,200 acres from Alternative A). The conditions of exchange and potential impacts on raptors would be similar to those described under Alternative A.

Alternative C

A total of 839,730 acres of Category 2 land would be available for conditional exchange (a decrease of 334,370 acres from Alternative A). The conditions of exchange and potential impacts on raptors would be similar to those described under Alternative A.

Retaining and supplementing the collective land base associated within the ACECs and WSAs would contribute to the long-term availability of raptor nest and foraging habitats (particularly for woodland dwelling species). These special management areas encompass 10 percent of the resource area's pinyon/juniper woodlands, 50 percent and 32 percent of aspen in the Blue Mountain and Piceance and Douglas/Cathedral GRAs, and 25 percent of spruce-fir types in the Piceance and Douglas/Cathedral GRA complex.

Alternative D

Removing retention status from the Texas-Missouri-Evacuation ACEC (Douglas/Cathedral GRA) would reduce the acreage of pinyon/juniper woodlands retained under special area management to 9 percent of that available resource area wide. Aspen and coniferous forest types would be retained at the same levels as described for Alternative C.

IMPACTS FROM ACCESS MANAGEMENT

Alternatives A and B

No impacts

Alternatives C and D

Problems associated with the expansion of public access (road proliferation and intensified land use on raptor nesting habitats) would be minimized with the incorporation of applicable road density limitations and confining travel to designated roads and trails (see motorized vehicle travel).

IMPACTS FROM FIRE MANAGEMENT

Alternative A

Small, high-frequency fires would generally be considered advantageous in maintaining the dispersion and distribution of forage and cover components required to maintain nest and foraging substrate for raptors in the long term. Major vegetation communities involved would typically be sagebrush/greasewood and pinyon/juniper.

Alternatives B, C, and D

Fire management would affect raptor habitat in the same manner as described under Alternative A except fire suppression strategy along the White River corridor would help maintain the short-term status of riverine woodland and shrubland habitats as a limited and specialized habitat for nesting and winter use activities of raptors and associated prey.

CUMULATIVE IMPACTS ON NON-T/E RAPTOR MANAGEMENT

Alternative A

Woodland/timber manipulations (oil and gas development and livestock, forestry and wildlife programs) would reduce total woodland raptor nest and foraging habitat capacity by 10-15 percent in the short term (plan life) and 30-40 percent in the long term (rotation age). Raptors and non-game prey bases associated with mature pinyon/juniper and spruce-fir types would realize long-term (100 to 250 year) reductions in habitat capacity of about 35 percent and 50 percent, respectively. Proposed woodland and brushland manipulations would increase the extent of suitable foraging area for buteo hawks, eagles, falcons, and harrier by up to 20 percent for 50-60 years.

Designating wilderness areas and applying bald eagle stipulations would reserve about 4 percent of the pinyon/juniper, 8 percent of the spruce-fir, and 6 percent of the riverine cottonwood habitats available in the resource area for use as woodland nest and foraging habitat.

Implementing both NSO and TL stipulations would effectively protect annual reproductive efforts, but would be incapable of maintaining the integrity of nest territories for subsequent use. Oil and gas access construction and attendant road proliferation and recreation use would reduce nest habitat utility by up to 10 percent.

Enhancing herbaceous understory composition and condition would improve the abundance and diversity of non-game prey available to breeding and wintering raptors on up to 25 percent of grassland/shrubland habitats (soaring raptors) and 27 percent of pinyon/juniper habitats (woodland hawks and owls). These effects would be extensive, but subtle, and may be expected to increase nestling survival rates slightly in the long term. Declining winter deer populations, particularly in the Piceance and Danforth/Jensen GRAs, would reduce deciduous browse use by as much as one-third and promote enhanced structural complexity beneath pinyon/juniper canopies on up to 36 percent of lower elevation woodlands.

Alternative B

Manipulating woodlands and brushlands would increase the extent of suitable foraging area for buteo hawks, eagles, falcons, and harriers by up to 15 percent for 50-60 years. Woodland manipulations would reduce nest and foraging habitat capacity for woodland associates by an estimated 7 percent in the short term. Species obligate to mature pinyon/juniper would experience long-term reductions in habitat capacity of 35-40 percent, with effects most pronounced in the Piceance and Douglas/Cathedral GRAs (50 percent reduction). Habitat capacity for more generalized breeding raptors and other non-game species and winter foraging habitat would decline by about 25 percent in the long term. Long-term reductions in spruce-fir and aspen habitats would approach 2 percent for each type. Woodland retention guidelines (i.e., big game) would reserve 40 percent of woodland cover within project locales (1 mile radii) in blocks of up to 800 acres.

Implementing NSO and TL stipulations would fully protect annual reproductive efforts and the short-term utility of nest territories. Applying nest habitat provisions would help maintain the integrity of known territories for extended periods of time, but would not prevent declines in long-term habitat availability or development.

Road-related influences would reduce overall nest habitat utility by up to 10 percent. Limiting road densities in select habitats would stabilize or slightly reduce disruption of nesting activities or disuse of suitable habitat on 15 percent of the resource area, including up to 20 percent of pinyon/juniper habitats, 40 percent of aspen/spruce-fir types, and 28 percent of all ferruginous hawk and burrowing owl breeding habitats.

Enhancing herbaceous understory composition and condition would improve the abundance and diversity of non-game prey available to breeding and wintering raptors on up to 50 percent of grassland/shrubland habitats (soaring raptors) and up to 40 percent of woodland habitats (woodland raptors). These effects would be subtle, but may be expected to increase nest success and recruitment slightly in the long term. Acting similarly, general declines in winter deer populations, particularly in the Piceance and Danforth/Jensen GRAs, would reduce deciduous browse use by as much as one-third and promote enhanced structural complexity beneath pinyon/juniper canopies on up to 36 percent of lower elevation woodlands in the long term.

Alternative C

Manipulating woodlands and brushlands would increase the extent of suitable foraging area for buteo hawks, eagles, falcons, and harriers by up to 15 percent for 50-60 years. Woodland manipulations would reduce nest and foraging habitat capacity for woodland associates by an estimated 4 percent through plan life. Species obligate to mature pinyon/juniper would experience long-term (i.e., rotation age) reductions in habitat capacity of about 8 percent, with reductions in any individual GRA not exceeding about 10 percent (Douglas/Cathedral GRA). Habitat capacity for more generalized breeding raptors and other non-game species and winter foraging habitat would decline by no more than about 5 percent in the long term under selective woodland harvest regimens and with defined snag retention guidelines. Modification to spruce-fir and aspen habitats may approach 2 percent for each type through plan life, but would not be expected to depress habitat capacity for associated species. Dispersal of woodland manipulations to enhance big game habitat utility would tend to aggravate fragmentation of habitats required by more specialized woodland associates more so than Alternative A or B. These guidelines would reserve 40 percent of woodland cover within project locales (1 mile radii) in blocks of up to 500 acres.

NSO and TL stipulations would fully protect annual reproductive efforts and the short-term utility of nest territories. Applying nest habitat provisions and improved nest detection gained via inventory requirements would help maintain the integrity of established territories for extended periods of time.

Limiting BLM road densities would stabilize or slightly reduce disruption of nesting activities or disuse of suitable habitat (estimated at 10 percent) attributable to road-related activity on up to 65 percent of the resource area, including 80 percent of pinyon/juniper and ferruginous hawk/burrowing owl breeding habitats, and 46 percent of aspen/spruce-fir types.

Enhancing herbaceous understory composition and condition would improve the abundance and diversity of non-game prey available to breeding and wintering raptors at levels comparable to Alternative B. These effects would be subtle, but may be expected to increase nest success and recruitment slightly in the long term.

Alternative D

Cumulative impacts would be the same as described for Alternative C except reduced cover dispersion requirements (i.e., enhancement of big game habitat utility) for woodland manipulations would tend to increase the maximum potential size of woodland tracts in project areas to 800 acres and would be more conducive to the long-term availability and development of canopy characteristics required by more specialized woodland dwelling raptors (e.g., northern goshawk) and associated non-game species (e.g., hermit thrush).

Modified raptor inventory requirements would continue to help maintain the integrity of established territories in preferred habitats for extended periods of time but at levels somewhat reduced from Alternative C.

IMPACTS ON GROUSE MANAGEMENT

IMPACTS FROM GROUSE MANAGEMENT

Alternative A

Avoiding sagebrush stands having less than 40 percent canopy density and within 2 miles of a lek would capture the majority of important nest habitat extent and would help minimize significant loss or deterioration of occupied nest habitat. Assigning TL and NSO stipulations to sage grouse strutting grounds would prevent disruption of breeding activities and maintain annual lek visitation.

Enhancing 10,330 acres of sage grouse habitat would comprise about 11 percent of BLM- administered sage grouse brood habitat in the Piceance GRA and 3 percent of grouse brood ranges available within the resource area.

Imposing the full 60-day limitation (Section 6 allowances) within all potential nest habitat from April 1 to May 31 would provide protection for early nesting efforts, but only 6-7 percent of nest activity through hatch.

Avoiding the removal or conversion of Piceance Basin's Douglas-fir stands (for maintenance of elk escape cover) may minimize long-term reductions of blue grouse winter and late brood habitat.

Alternative B

Reservation of herbaceous growth through the brood period

would enhance production (i.e., successful nest attempts) and recruitment of young (i.e., survival) on all brood and nest habitat in Blue Mountain GRA, and on 59 percent of those in the Piceance and Douglas/Cathedral GRAs.

AMPs proposed for revision or development would be expanded from 8 (Alternative A) to as many as 16. Targeting high priority nest/brood habitats within the Blue Mountain and Piceance GRAs would expand management considerations on habitat from 3 percent area-wide to 47 percent.

Reintroducing sagebrush following larger fire events would accelerate the recovery of habitat conditions suitable for grouse. Guidelines allow short-term development of minimally adequate sagebrush density on no more than 20 percent of the treated acreage. Improving sage grouse habitat would yield concurrent benefits to approximately 35 percent of potential blue grouse nest and brood habitat extent. Applying herbaceous cover standards to blue grouse brood and nest habitat on the Smith-Crawford Allotment (Danforth/Jensen GRA) would affect up to 28 percent of all administered potential nest and brood range in this GRA.

Expanding NSO stipulations around leks would serve to protect important features and sites associated with strutting activities (e.g., male loafing areas). Nesting activities would continue to be vulnerable to disruption at levels described in Alternative A.

Minimizing occupancy or long-term site conversion of aspen/deciduous shrub and coniferous forest types within blue grouse ranges would not only minimize unnecessary modifications in the short term, but maintain elements necessary to satisfy nest/brood and winter habitat requirements in the long term.

Establishing and/or augmenting native grouse populations (e.g., sharp-tailed and ruffed grouse) would be considered on a case-by-case basis.

Alternative C

The direction and focus of grouse management would be similar to Alternative B.

Reestablishing sagebrush when residual cover comprises less than 40 percent of cumulative treatment extent and/or distances to suitable cover exceed 500 feet, could reduce the long-term influence of a clumped accumulation of smaller (<500 acres) treatment events on brood, winter and overall use areas. Retaining adequate herbaceous nest and brood cover would apply across all sage grouse ranges, rather than high hunter use areas. AMPs proposed for revision or development would be expanded from 8 (in Alternative A) to 34.

Additional TL and NSO stipulations would be imposed to prevent significant levels of nest failure and abandonment once 10 percent or more of suitable nest habitat associated with individual leks is adversely influenced by any land use activity. TL stipulation timeframes would allow about 75 percent of nesting attempts to progress unmolested through hatch across 90 percent of delineated nest habitat.

Manipulating habitat for restoration and protection of channel and riparian systems within brood ranges, and treating suboptimal sagebrush, mixed brush or aspen stands, would generally redevelop desirable stand characteristics and increase the extent and continuity of suitable grouse habitats in the long term.

Incorporating reclamation techniques which preserve long-term site potential and accelerate recovery of desirable stand characteristics for blue grouse would discourage surface disturbance of aspen (i.e., brood function) and coniferous forest (i.e., winter use). Reservation or development of 50 percent mature/overmature age classes within conifer stands would prevent localized long-term reductions of winter habitat.

Alternative D

Grouse management would be nearly identical to that described for Alternative C, except that sagebrush reestablishment criteria as presented in Alternative B would be carried forward. These standards would allow development of minimally-adequate sagebrush canopies satisfying general grouse requirements on 20 percent of impaired acreage.

IMPACTS FROM SOILS, SURFACE WATER, GROUND WATER, AND WATER RIGHTS MANAGEMENT

Alternative A

Implementing objectives for soils, surface water, ground water, and water rights management would complement enhancement of coincident sage grouse nest and brood habitats by promoting soil stability and the improvement or restoration of riparian systems and associated upland

vegetation, notably in lower elevation sagebrush/saltbush vegetation types.

Properly designed watershed treatments would improve grouse habitat by increasing herbaceous forage availability and improving the long-term suitability of suboptimal sagebrush stands for sage grouse use.

Improving upland herbaceous cover and riparian availability would extend to 20 miles of channel and up to 58,380 acres of BLM-administered brood and production areas (32 percent of total brood and production areas in GMU 10). Modifying sagebrush stands with suitable sage grouse habitat characteristics would be minimized, while treatments directed at unsuitable or suboptimal sagebrush stands may improve habitat utility in the long term.

Identifying up to 86,380 acres in the Black's Gulch and Crooked Wash/Deep Channel drainages for improvement would encompass 18,190 acres of BLM-administered grouse range and represent 63 percent of all lands occupied by grouse within the Crooked Wash/Deep Channel GRA. Long-term improvements may be evident on 15 percent of all grouse habitats in the resource area.

Alternative B

In addition to the impacts described for Alternative A, watershed improvement practices would be subject to a defined set of vegetation treatment guidelines designed to avoid or minimize adverse modifications to sage grouse habitat.

Alternatives C and D

Conditional NSO stipulations applied widely to landslide areas and fragile soils would substantially reduce deterioration in soil productivity associated with accelerated erosion induced by surface disturbing activities. Watershed improvement practices would be subject to the same vegetative treatment guidelines as in Alternative B.

Surface water management's effects on sage grouse would be similar to those discussed in Alternative A. Applying vegetation treatment guidelines to watershed improvement practices involving suitable sagebrush habitats would minimize adverse modifications to sage grouse habitat utility (see Grouse Management section). Surface water management would involve up to 18 percent of all grouse habitats.

IMPACTS FROM OIL AND GAS MANAGEMENT

Alternative A

Developing oil and gas would subject 11-15 percent of within-field habitats and 3-4 percent of population-wide habitats to long-term loss or modification. Once altered, shrub conditions favorable for grouse occupation are slow to develop (15+ years). Clearing vegetation associated with pipeline right-of-ways may enhance certain habitat values (e.g., increased availability of insect and herbaceous forage for broods), but indirect impacts on production (nesting) areas through subsequent use of these corridors as vehicle and predator travel lanes may detract from habitat suitability.

Sage grouse leks are currently protected by 10-40 acre NSOs, however, this restriction provides no functional protection of biological activities that are associated with, but occur beyond, the lek site. Indirect oil and gas impacts may disrupt up to half of yearling hen nesting attempts, with the remaining half subjected to increased predation. At average road density levels (1.5 miles per square mile), approximately 10 percent of potential nest habitat would be vulnerable. Combined impacts are considered minor until 10 percent of the suitable nest habitat associated with an individual lek is affected. Current levels of in-field oil and gas development influences approximately 20 percent of sage grouse nest habitat; full-field development may involve 30-40 percent of suitable nest habitat.

Blue grouse nesting and brood-rearing areas, particularly in the Piceance and Blue Mountain GRAs, are often intermingled or coincident with sage grouse production and brood areas. It is reasoned that these seasonal activities are susceptible to a similar array of direct and indirect impacts as discussed for sage grouse.

Alternative B

Oil and gas activities influence on blue grouse habitats would be similar to that discussed in Alternative A. Oil and gas occupation would be redirected from preferred conifer and aspen habitats through application of land use objectives minimizing incorporation of these types.

Implementing proposed habitat objectives (i.e., avoidance of suitable nest, brood and winter sagebrush habitats) may reduce the involvement of suitable habitats at full oil and gas development by up to half that projected in Alternative A,

and limit cumulative adverse modification of suitable habitat to 10 percent of that available in individual lek/nest complexes.

Designating an NSO for the Moosehead Road Closure Area would reserve 4 percent of the total nesting range and 10 percent of total brood range available to sage grouse, and would also reserve about 8 percent of the total mountain shrub and 45 percent of the aspen type important as blue grouse brood and nest habitat in the Blue Mountain GRA. Proposed 0.25 mile NSOs established around sage grouse leks would not only provide site maintenance as in Alternative A, but help reserve important features associated with breeding activities (e.g., male loafing sites), and help sustain long-term site utility.

TL stipulations would be applied to leks for those activities exempted from the NSO. Road density limitations (in big game critical habitats and ferret reintroduction areas) would stabilize road influences on 10-15 percent of all sage and blue grouse production areas in the Blue Mountain and Piceance GRAs, and 32 percent of sage grouse production areas in the Wolf Ridge/Red Wash GRA.

Alternative C

Preventing adverse surface occupation or disturbance (through a no mineral leasing provision in the Moosehead ACEC) on 14 percent and 48 percent, respectively, of all deciduous shrub and aspen communities in the Blue Mountain GRA (habitat essential for blue grouse nest and brood rearing functions) would also reserve 4 percent of the total nesting range and 10 percent of total brood range available to sage grouse from potential oil and gas-related influence in this GRA.

The influence and extent of NSO stipulations established around sage grouse leks would be identical to those described for Alternative B. Additionally, a timing limitation designed to reduce disruption of nest activities would be imposed on any further activity once 10 percent or more of suitable nest habitat associated with an individual lek was adversely influenced, and would allow an average 75 percent of nesting attempts to progress through hatch on 90 percent of federally-administered nest habitat.

Alternative D

Oil and gas activities would have the same influence on grouse as in Alternative C. The no mineral leasing provision for the Moosehead Mountain ACEC would be replaced by a functionally identical NSO.

IMPACTS FROM OIL SHALE MANAGEMENT

All Alternatives

In the event open-pit mining occurred on the approximately 12,800 acres of sage grouse range available for open pit mining (including about 6,400 acres of production/nesting areas), sage grouse overall range and production areas in the Piceance GRA would be reduced by about 15 percent in the long term. However, oil shale claim patenting has reduced BLM administration of overall grouse range by 60 percent, and effective management of suitable/optimal habitat has been reduced 80-90 percent.

IMPACTS FROM COAL MANAGEMENT

All Alternatives

Grouse-related impacts associated with coal unsuitability application and habitat restoration would be similar to those discussed under big game.

Extensive grouse nesting, brood and winter use areas and special habitat components (e.g., aspen and riparian types) not considered in the unsuitability criteria would be especially vulnerable to large scale loss or fragmentation. Sage grouse range available for surface mining (3,500 acres) in the Danforth Study Area represents about 4 percent of overall habitat available within portions of Game Management Units 12, 211, and 23. Sixty-eight percent of the Rangely Study Area is considered suitable for surface mining, including 90 percent of the area's delineated production/nesting habitat and 2 active leks delineated since 1981. This acreage represents 11 percent of GMU 10's delineated production/nesting habitat.

Full-scale development, in the Danforth Area, under current unsuitability classification, would involve no more than 4 percent of the Wilson Creek/Little Beaver sage grouse

population and 4 percent of the resource area's blue grouse (within aspen and mixed brush communities) and possibly sharp-tailed grouse range. Applying surface stipulations in the Rangely area would minimize adverse impacts to sage grouse, as underground mining would likely remain the only form of coal extraction in this area.

IMPACTS FROM MINERAL MATERIALS MANAGEMENT

Alternative A

Developing sand and gravel in suitable sagebrush stands adjacent to the White River (Stedman and Blair Mesas) would impact areas of concentrated sage grouse use during severe winters and could have serious ramifications on the long-term viability of the Crooked Wash/Deep Channel sage grouse population. NSO and TL stipulations elsewhere are sufficient to reduce or minimize local impacts to sage grouse breeding activity.

Alternatives B, C, and D

Expanding NSO protection of sage grouse leks would prevent adverse site alterations that may result from saleable mineral sales. Incorporation of proposed grouse habitat objectives would limit to 10 percent cumulative declines in the availability or distribution of sage grouse nesting and brood habitats.

Application of big game-related habitat objectives would effectively limit localized (1 mile radius) reductions in grouse winter habitat to 20 percent along the White River corridor, and would likely remove the Crooked Wash/Deep Channel sage grouse population from potential jeopardy.

IMPACTS FROM HAZARDOUS MATERIALS MANAGEMENT

All Alternatives

Removing and/or preventing hazardous material releases would have the obvious benefit of minimizing potential direct mortality or adverse effects on reproductive or behavioral function.

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

Alternative A

Maintenance of mid- to high-seral condition sagebrush sites (15-40 percent canopy coverage with well developed herbaceous understories) across 93 percent of the area is consistent with grouse-related objectives for maintaining the suitable extent of nest, brood, and general summer/fall ranges. Improvement of remaining early-seral sagebrush types within nest, brood, and general summer/fall ranges would benefit these range functions. Seral improvement in low elevation sage grouse ranges in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs may increase the utility and extent of spring/fall habitats by 10-15 percent in the long term.

Sagebrush ranges in lower seral condition, characterized by depauperate understories and dense, tall canopies, may provide important localized sources of forage and cover for grouse during winters with heavy and prolonged snowpack. Thus, improvement techniques that remove sagebrush canopies may reduce short-term habitat utility and range capacity.

Designing case-by-case manipulations of sagebrush would likely minimize short-term habitat losses such that current population levels would be maintained in the long term.

Maintaining disclimax mountain shrub types (i.e., preventing pinyon/juniper encroachment) on ranges peripheral to occupied sage grouse ranges would likely reestablish function to formerly occupied habitats. These measures would be most influential in the Piceance GRA, where suitable habitat extent for sage grouse could be expanded by 2-3 percent.

Blue grouse populations would be affected similarly to sage grouse where the species tend to use sagebrush habitats for nesting/brood-rearing functions (e.g., Blue Mountain GRA).

Alternative B

Improving early- and mid-seral sagebrush types with poorly developed herbaceous understories or canopies with excessive height and density would generally complement nest, brood, and summer/fall functions of grouse.

Promoting long-term high-seral condition in all sagebrush communities, particularly on sage grouse winter ranges and production areas, would ultimately depress sagebrush reproduction and canopy density to levels largely suboptimal for maintenance of these functions at current levels. These communities may also tend to exhibit a poorly diversified forb component (e.g., variety, phenology) with limited utility or availability for grouse.

Seral objectives for mountain shrub communities would be the same as Alternative A.

Relocating roads (where feasible) and designing new construction to minimize involvement of more productive sagebrush stands would be compatible with grouse management objectives for minimizing direct long-term loss of habitats.

Alternatives C and D

The effects of improving early-seral ranges would be the same as Alternatives B, however, mid-seral communities would be maintained or treated in a manner which would not impair grouse-related utility.

These objectives would provide the flexibility to improve herbaceous cover and forage components of mid-seral habitats (e.g., sage grouse nesting) without compromising requisite canopy functions, would circumvent progressive declines in sagebrush canopy density associated with seral advance, and would promote broad-scale maintenance of suitable sage grouse nesting and wintering habitat characteristics in the long term.

Objectives and influences associated with the mountain shrub communities and blue grouse habitats would be the same as those discussed in Alternative B.

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Controlling noxious and problem weeds in compliance with Area and Bureau NEPA documents would adequately address short-term wildlife concerns, but long-term expansion of noxious weeds may threaten grouse forage and cover resources.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Applying NSO protection for beavers would preempt management emphasis from many upland stream systems or riverine reaches that possess important wildlife habitat value (e.g., Blue Mountain GRA brood range) that, due to character or condition, are incapable of supporting viable beaver populations. Identified benefits for riparian improvement would extend to about 11 percent of the brood habitat in Piceance GRA, while NSO application to Soldier and Lake Creek (Douglas/Cathedral GRA) would pertain primarily to blue grouse.

Alternative B

Improving identified high priority riparian systems in the Blue Mountain and Crooked Wash/Deep Channel GRAs would enhance sage grouse brood ranges (10 percent in Blue Mountain GRA) and overall ranges (24 percent in Crooked Wash/Deep Channel GRA) by increasing the availability of succulent herbaceous forage.

Integrating riparian restoration and enhancement on grouse brood ranges would highlight management opportunities on medium priority systems, and potentially expand riparian benefits to an additional 5 percent and 10 percent of the brood range in the Blue Mountain and Crooked Wash/Deep Channel GRAs, respectively. Riparian improvements in the Piceance and Douglas/Cathedral GRAs would be similar to those discussed in Alternative A.

Alternatives C and D

Impacts would be the same as described for Alternative B, but treatment of medium priority streams on grouse brood ranges in the Blue Mountain and Crooked Wash/Deep Channel GRAs would be certain.

IMPACTS FROM SPECIAL STATUS PLANTS AND ACEC MANAGEMENT

Alternatives A and B

Certain tracts of special status plants would add incrementally to the maintenance of suitable blue grouse winter habitat (e.g., Douglas-fir stands), however, due to

their very small size and widely distributed nature, they cannot be expected to contribute significantly toward grouse habitat objectives when viewed individually.

Alternatives C and D

Same as alternatives A and B. In addition, protecting 14 percent and 48 percent of all deciduous shrub and aspen communities in the Blue Mountain GRA from surface disturbance via CSU application on Moosehead ACEC would maintain habitats essential for blue grouse nest and brood rearing functions.

IMPACTS FROM TIMBER AND WOODLANDS MANAGEMENT

Alternative A

In the long term (100 years), 60 percent of potential blue grouse winter habitat base would be commercially harvested (confined to the Piceance and Douglas/Cathedral GRAs). Approximately 75 percent of the treated acres would remain suboptimal for blue grouse winter use (optimal blue grouse winter habitats are presumed to be represented by uneven age mature and overmature timber types) and would reduce winter habitat availability by up to 45 percent.

In the short term (20 years), 12 percent of spruce-fir base in these GRAs would be harvested. Current land use objectives that minimize involvement of spruce-fir on ridgetops and the heads of draws would likely retain forest tracts sufficient to maintain overall blue grouse habitat capacity.

Commercially harvested pinyon/juniper woodlands at higher elevations would revert to a mountain browse type and may assume characteristics suitable for blue grouse over a 60-year period. Assuming 25 percent of the treated acreage would be occupied by blue grouse, woodland management would be capable of expanding blue grouse range within the Crooked Wash/Deep Channel GRA by 10 percent and the Douglas/Cathedral GRA by 16 percent.

Unlimited personal-use harvesting of tree-like clones of oakbrush (over 4 inches diameter) which exceed the plant's regenerative capacity, would remove a preferred source of midday cover for blue grouse through the summer and fall months. Tree-like oak clones in the Danforth/Jensen GRA epitomize savannah-type landscapes, and may constitute valuable sources of seasonal forage and cover for sharp-tailed grouse.

Alternative B

Converting 400 acres (2 percent) of spruce-fir to a relatively young age class with even-aged character, would impact blue grouse habitat, which is optimum at mature and overmature states. Up to 100 acres (one-quarter) of the commercial base may qualify as potentially suitable blue grouse winter habitat through the rotation age.

Eighty percent of the Douglas-fir harvest (320 acres) would occur in Piceance GRA, reducing the long-term availability of winter habitat by up to 10 percent. Long-term loss would be limited to about 10 percent in popular grouse hunting areas (Cathedral Bluffs from Black Sulphur to Trail Canyon) and could approach 20 percent in the Cow Creek area. Short-term harvest levels could involve 2-3 percent more suitable habitat in these areas. Grouse-related treatments would not be expected to reduce winter habitat capacity for blue grouse in the Douglas/Cathedral or Piceance GRAs.

Harvesting 35 and 3 percent of the commercial aspen in Danforth and Piceance GRAs would remove a preferred and key feature of optimal blue grouse summer habitats. However, harvesting predominantly overmature stands on a 70-year rotation, particularly in the Danforth/Jensen GRA, would likely improve their suitability as grouse summer and late brood habitats, if regeneration is protected.

Impacts from pinyon/juniper and oak harvests would be similar to Alternative A, except that marginal benefits, associated with the pinyon/juniper harvest, derived by sage and blue grouse would be less likely because of the reduction in clearcut acreage.

Alternatives C and D

Harvesting small, widely dispersed stands of spruce and fir would achieve wildlife, riparian and stand structure objectives (i.e., enhancement of stand diversity, persistence and composition) without reducing local winter habitat availability or utility for blue grouse. Harvests of this nature would likely enhance blue grouse brood-rearing habitats and long-term maintenance of winter use functions.

Enhancing stand age diversity and understory composition in decadent aspen sites would improve the extent and distribution of habitats suitable for summer and late brood functions of blue grouse.

The effects of personal use harvest of oakbrush on blue and sharp-tailed grouse is identical to that described for Alternative A, but harvesting would be limited to 20 cords.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternative A

Changes in livestock management predicted in the Grazing EIS would benefit grouse nesting and brood rearing functions by increasing forb availability (forage) and effective herbaceous cover (thermal cover and predator concealment) during the nesting and early brood-rearing period. Grazing use that reserves 50 percent of the annual herbaceous production through mid September is considered compatible with grouse cover and forage management objectives.

Deterioration of upland meadows and channel systems and premature depletion of broadleaf forage is considered a factor coequal with sagebrush conversion in contributing to declines in continental sage grouse populations.
Riparian enhancement on a limited number of perennial systems in the Piceance GRA could improve about 11 percent of this GRA's brood ranges.

Heavy use of sagebrush (>50 percent annual growth), normally a product of late winter deer concentrations or dual use by deer and sheep, can be expected to reduce sagebrush composition in the community over time. Loss of sagebrush as a forage and cover source is of concern particularly in the lower elevation winter ranges of the Crooked Wash/Deep Channel and Wolf Ridge/Red Wash GRAs.

In the event sagebrush treatment were conducted in proportion to its availability on seasonal habitat, about 12 percent of each habitat category in the Blue Mountain GRA and 20-25 percent of habitats in remaining GRAs would be adversely modified through plan life. The land use restriction minimizing adverse alteration of suitable nest habitats highlights the maintenance of about 30 percent of BLM-administered sagebrush communities occupied by grouse in the Piceance, Blue Mountain, and Wolf Ridge/Red Wash GRAs, but fails to account for seasonal uses outside the nesting and early brood period.

Although applicable only to the Piceance GRA, manipulation of pinyon/juniper encroachment and subsequent reversion to shrub types suitable for grouse occupation, is capable of expanding the habitat base available for grouse in this GRA by about 3 percent. Manipulation of mountain shrub vegetation within blue and remnant sharp-tailed grouse habitat is not viewed with concern as these communities generally develop structural characteristics suitable for grouse within 4 to 5 years of treatment.

Alternative B

Benefits derived by livestock management via the Grazing EIS would be expanded such that riparian/wet meadow areas or upland meadows would be restored on up to 15 and 54 percent of grouse ranges in the Blue Mountain and Crooked Wash/Deep Channel GRAs, respectively. Treatments within grouse range would be encouraged on suboptimal sagebrush stands.

Retaining 50 percent herbaceous growth (by weight) through the end of the brood period would extend to all brood and nest habitats in the Blue Mountain GRA and 39 percent of those in the Piceance and Douglas/Cathedral GRAs, and would either attenuate reductions in herbaceous cover through the brood period or allow regrowth such that suitable brood properties are restored within the brood period.

Winter grazing use by livestock on sagebrush ranges would be excessive in terms of providing useful herbaceous cover for sage grouse nesting, but long-term improvements may be gained if ungulate forage use is reduced and if treatments occur on suboptimal habitat. Cumulative loss of suitable nest habitat in the Blue Mountain and Wolf Ridge/Red Wash GRAs would be limited to 10 percent overall (less than 1 percent per year). Treating suboptimal stands in suitable habitats would reduce short-term losses of suitable brood, winter, and overall habitats in these GRAs to about 10 percent.

Reestablishing sagebrush when undesirable habitat reduction events exceed 500 acres would allow restoration of sagebrush canopies to the minimum required for general sage grouse utility, and would accelerate development of conditions suitable for more specialized functions (e.g., nesting cover) in the long term.

Manipulating mountain shrub vegetation within blue grouse and remnant sharp-tailed grouse habitat would complement grouse management, particularly under proposed big game distribution objectives. Livestock management facilities (e.g., fences, trails, waters) would be necessary and integral tools for redistributing livestock use and enhancing management flexibility in a manner favorable to grouse.

Alternatives C and D

Livestock management's impact on grouse would be similar to that described in Alternative B. Retention of 50 percent herbaceous growth through the brood season would apply area-wide. Any sagebrush manipulation event would be subject to reestablishment (i.e., 30 percent of treatment area at 15 percent mature canopy cover) when residual cover comprised less than 40 percent of cumulative treatment extent and/or distances to suitable cover exceeded 500 feet. These guidelines would be more widely applicable than that offered in Alternative B, and could be implemented to reduce the long-term influence of a clumped accumulation of smaller (< 500 acres) events on brood, winter and overall use areas.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternative A

Grazing use by authorized numbers of horses is inclusive with grouse-related effects discussed in the livestock management section. Continued use of mountain shrub and sagebrush communities by wild horses would reduce herbaceous cover on general summer and brood-rearing ranges of both species of grouse. Peak horse use within the herd areas and HMA adds approximately 10-15 percent to forage consumption levels in areas occupied by blue and sage grouse.

Increasing horse use has been implicated as the primary factor in seriously overgrazed herbaceous cover components on brood and nest habitats in western Piceance Basin, in particular the Square S-Pasture C and Boxelder allotments.

Alternative B

Redistributing horses would reduce horse occupation of overall grouse ranges by 69 percent relative to Alternative A and would reduce herbaceous forage use by about 6 percent across virtually all sage and blue grouse nesting and brood habitats. By removing peak horse use, herbaceous forage and cover removal would be reduced up to 20 percent, and would aid appreciably in realizing proposed grouse nest/brood cover objectives on 15 percent of BLM-administered brood and nest ranges available in the Piceance and Douglas/Cathedral GRAs.

Horse use would be relegated to about 3 percent of overall sage grouse ranges associated with the Piceance population. Remaining grouse ranges would experience a 27 percent decline in forage use attributable to horses; representing about a 2 percent decline in overall herbaceous forage use.

Alternative C

Proposed horse management would influence grouse brood and nesting habitats in a manner similar to that discussed in Alternative A, and would closely mimic the current situation. Concern remains that once horse occupation is authorized in the former North Piceance and West Douglas Herd Areas and reauthorized in the Box Elder and Pasture C portions of the existing HMA, horse populations would regularly exceed maximum targets and impact the herbaceous vegetation component.

Alternative D

Horses would continue to influence grouse habitat by removing about 3 percent of herbaceous production as ground cover on nest and brood-rearing habitats.

Vegetation removal attributable to horses in the West Douglas and remainder of the North Piceance Herd Areas would persist at reduced (50 percent) levels for up to 10 years. Forage use would decline from about 6 percent (current situation) to 3 percent of herbaceous production. In the long term, horse removal from these Herd Areas would reduce overall forage use slightly on about 10 percent of the Douglas/Cathedral GRA's blue grouse range and 16 percent of sage grouse range associated with the Wolf Ridge/Red Wash complex (e.g., Boise Creek). Horse removals may increase plant material remaining after livestock and big game use by 2-5 percent (by weight), and may increase effective ground cover height in these areas by 10-15 percent.

IMPACTS FROM BIG GAME MANAGEMENT

Alternative A

Grazing-related influences on grouse are discussed in the livestock grazing section. Concentrating big game habitat improvements in sagebrush and mountain shrub types on 27,000 acres in the Piceance, Douglas/Cathedral, and Danforth/Jensen GRAs having no sage grouse function would avoid conflict with occupied sage grouse habitat.

Manipulating 12,740 acres of aspen and Douglas-fir (41 percent of the forest types remaining in the Piceance GRA) to enhance big game forage may drastically reduce winter habitat availability for blue grouse and severely reduce the extent, and fragment the distribution of, aspen types preferred by blue grouse during the breeding, late brood and fall periods. Big game browsing on aspen regeneration may jeopardize the recovery of this type as suitable grouse habitat.

Conversely, maintaining 20,720 acres of aspen and Douglas-fir forests as elk escape cover, would fully complement the maintenance of an indeterminate amount of essential blue grouse habitat.

Alternative B

Browse use limits and habitat objectives would help direct project implementation to relieve excessive big game use of sagebrush habitats, and maintain those habitats occupied by sage grouse in the Crooked Wash/Deep Channel and Wolf Ridge/Red Wash GRAs.

Implementing forage retention objectives on deer winter and pronghorn overall ranges may reserve up to 50 percent of the sagebrush habitats delineated as brood, winter and overall sage grouse ranges in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs, and about 10 percent in the Blue Mountain and Piceance and Douglas/Cathedral GRAs. This indirect reservation of sagebrush involves about 30 percent of all occupied sage grouse habitats in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs, and 3-5 percent in the Blue Mountain, Piceance and Douglas/Cathedral GRAs.

Reserving brush cover types (40 percent on localized basis) for big game would diversify mountain browse stand characteristics and complement long-term brood and nest habitats for both grouse. Similarly, big game objectives would minimize occupancy or long-term site conversion of aspen and coniferous forest types and reduce involvement of coincident blue grouse winter and brood habitats. Directing mountain browse treatments to stands unsuitable for grouse use may enhance utility of up to 17 percent of this type within blue grouse range.

Limiting road density on big game critical habitats to 1.5 miles/square mile on 10-15 percent of all sage grouse production areas in the Piceance and Blue Mountain GRAs would indirectly maintain or slightly reduce nest disruption.

Alternatives C and D

Big game's grazing influence on grouse nest and brood habitat conditions would be similar to that discussed in Alternative B.

Browse use objectives would relieve excessive big game use of sagebrush and facilitate long-term maintenance of lower elevation sage grouse habitats (i.e., Crooked Wash/Deep Channel and Wolf Ridge/Red Wash GRAs). Implementing big game objectives under reduced big game population targets may yield improvements in grouse habitat conditions within plan life.

Forage retention objectives applicable to deer winter and pronghorn overall ranges may reserve up to 80 percent of the Public Land sagebrush habitats delineated as brood, winter and overall sage grouse ranges in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs, and about 15 percent in the Blue Mountain and Piceance and Douglas/Cathedral GRAs. This indirect reservation of sagebrush involves nearly 50 percent of all occupied sage grouse habitats in the Wolf Ridge/Red Wash and Crooked Wash/Deep Channel GRAs, and 5-7 percent in the Blue Mountain, Piceance, and Douglas/Cathedral GRAs.

Management of brush and woodland cover types and habitat improvement projects intended for big game would have the same influence on grouse habitats as that discussed in Alternative B.

Additional road density limitations (3 miles/square mile) would stabilize road densities across remaining grouse ranges.

IMPACTS FROM FISHERIES MANAGEMENT

Alternative A

No impacts

Alternatives B, C, and D

Enhancing channel function on those fisheries identified for improvement would provide localized benefit to blue grouse brood habitats by increasing the availability and distribution of valley sites offering sources of herbaceous cover and forage through the entire brood period. Benefits would be realized on about 2 percent of blue grouse ranges in the

Piceance GRA and up to 8 percent of those in the Douglas/Cathedral GRA.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

Alternative A

No impacts

Alternatives B, C, and D

Limiting road densities in the ferret recovery areas to 1.5 miles/square mile would maintain or slightly reduce nest disruption on about 31 percent of sage grouse production areas in the Wolf Ridge/Red Wash GRA.

The influence of Colorado River cutthroat trout management on blue grouse brood habitat is integral with Grouse Management-Fisheries.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Reverting Oil Spring Mountain and Windy Gulch WSAs to multiple use status would predispose all or a portion of these areas (comprising about 3 percent of federally administered blue grouse range in the resource area) to exploration and development of mineral resources, livestock and forestry related vegetation manipulations and attendant access networks (see associated sections).

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Leaving 98 percent of the resource area open to unrestricted motorized vehicle travel would contribute to and aggravate disruption of (primarily) sage grouse nesting activities and increase predator-related nest and brood mortality.

Alternative B

Restricting motorized vehicle travel to existing roads and trails would indirectly aid in the maintenance of nest habitat suitability and utility. Road density limitations may limit road-related disruption of nest habitat to 10 percent on 10-15 percent of sage and blue grouse production areas in the Piceance and Blue Mountain GRAs and on 32 percent of sage grouse production areas in Wolf Ridge/Red Wash GRA.

Alternatives C and D

Restricting motorized vehicle travel to existing roads and trails would indirectly aid in the maintenance of nest habitat suitability and utility. Road density limitations would provide protection as described above, but would be extended to all remaining production areas, and would limit disruptive road influences to 20 percent on the remaining extent of grouse nesting range.

Access restrictions applied to the Moosehead Road Closure Area would be applied to the proposed Moosehead ACEC, thus including an additional 2,680 acres, and increasing the involvement of grouse production and brood habitats by 2 percent and 4 percent, respectively.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

Alternative A

Approximately 1,174,100 acres would be available for exchange. Evaluating wildlife issues and concerns prior to these exchanges would alleviate or offset significant losses of important wildlife values. Through negotiated application of special stipulations or provisions, it is thought that any acquisition would prove neutral or advantageous to wildlife, including grouse resources.

Alternative B

A total of 949,900 acres of Category 2 land would be available for conditional exchange (a decrease of 224,200 acres from Alternative A).

Alternative C

A total of 839,730 acres of Category 2 land would be available for conditional exchange (a decrease of 334,370 acres from Alternative A).

Alternative D

A total of 1,300,500 acres of Category 2 land would be available for conditional exchange (an increase of 126,400 acres from Alternative A).

IMPACTS FROM ACCESS MANAGEMENT

Alternative A

Disruption of wildlife activities (via access expansion) from increased recreational use and intensity would be of particular concern on critical grouse habitats. Without adequate enforcement presence and accompanying motorized vehicle road designations, applicable TL stipulations would generally be considered ineffective.

Alternative B

Implementing proposed road-density limitations would stabilize existing road networks on 10-15 percent of sage and blue grouse production areas in the Piceance and Blue Mountain GRAs and 32 percent of sage grouse production areas in the Wolf Ridge/Red Wash GRA.

Alternatives C and D

Problems associated with the expansion of public access, road proliferation and intensified land use on grouse nesting habitats would be minimized with the incorporation of applicable road density limitations and confining travel to designated roads and trails, as described in the Motorized Vehicle Travel Management Section.

IMPACTS FROM WITHDRAWALS MANAGEMENT

All Alternatives

Precluding disposal by any means in oil shale withdrawals would, on occasion, prevent consideration of exchange important to the consolidation of high-value wildlife habitats.

IMPACTS FROM FIRE MANAGEMENT

All Alternatives

Large recurrent or contiguous fire events on sagebrush ranges, would exert the greatest influence on grouse habitat suitability. Extensive loss of cover and forage would depress habitat utility and/or forage availability in the short and long term, and would be most influential on winter concentration areas in the Crooked Wash/Deep Channel and Wolf Ridge/Red Wash GRAs and nest/brood ranges in the Piceance and Douglas/Cathedral and Blue Mountain GRAs.

Immediately suppressing fires on suitable sagebrush types would protect concentrated grouse winter use areas (Crooked Wash/Deep Channel and Wolf Ridge/Red Wash GRAs). Immediate suppression would also be implemented on starts that could exceed 200 acres within important sage grouse nesting and brood-rearing areas (i.e., Piceance, Blue Mountain GRAs).

CUMULATIVE IMPACTS ON GROUSE MANAGEMENT

Alternative A

Removing horses and implementing watershed improvements would enhance herbaceous cover and forage availability on up to 25 percent of the sage and blue grouse nest and brood habitats through and beyond plan life. Enhanced nest success and chick recruitment attributable to these improvements would have a positive, but limited influence on grouse populations.

Sagebrush habitats modified from livestock forage enhancement and oil and gas development would reduce the short-term availability of suitable grouse nesting habitat by 12-37 percent and brood and overall range by 13-41 percent over a 15-20 year period. Treatment of sagebrush unsuitable for grouse use (i.e., canopy density, height) would be capable of expanding the extent of suitable sagebrush habitats by 5-10 percent in the long term. As manipulated acreage (20-30 percent of sagebrush habitats) regains properties suitable for grouse use, long-term habitat capacity may exceed current levels by up to 15 percent.

Although woodland harvest would expand the availability of suitable blue grouse spring through fall habitats by up to 4 percent, timber harvest and big game forage enhancement projects would reduce the overall availability and long-term utility of blue grouse winter use habitats (i.e., spruce, fir and aspen) by 8 percent in the short term and up to 33 percent in the long term. Habitat modifications on larger tracts of publicly accessible BLM lands could exceed 50 percent and may have serious long-term effects on both year-round bird distribution and winter survival.

Oil and gas development and subsequent off road vehicle activities in oil and gas fields would disrupt nest activity on up to 40 percent of in-field nest habitat. An estimated 11-15 percent of all grouse nesting habitat would be vulnerable to road-related disturbance. Continued proliferation of trails and roads would increase nest habitat involvement by a indeterminate degree. Applying TL and NSO stipulations would be sufficient to prevent disruption of annual sage grouse breeding activities from all permitted surface use activities, but cannot prevent habitat modifications in the vicinity of the site that may reduce long-term site suitability.

Alternative B

Removing horses, implementing grazing use goals on nest and brood ranges, and improving watersheds would enhance herbaceous cover and forage availability on up to 63 percent of the grouse nest and brood habitats through and beyond plan life. Enhancing nest success and chick recruitment via improved ground cover and herbaceous forage would have an indeterminate, but substantial long-term beneficial influence on grouse populations.

Modifying sagebrush habitats for livestock forage enhancement and oil and gas development would reduce the availability of suitable sage grouse nesting habitat by 12-24 percent and brood and overall range by about 23 percent over a 15-20 year period. Application of habitat guidelines would strongly emphasize treatment of sagebrush stands unsuitable for grouse use. Allowing sagebrush reestablishment on larger, unplanned manipulations (primarily wildfire) would accelerate longer term recovery of grouse nesting and brood cover.

Timber modifications on larger tracts of publicly accessible BLM lands could approach 10-20 percent in the Piceance GRA, and could reduce blue grouse winter use habitats by 2-3 percent and 10 percent in the short and long terms, respectively. Harvesting 9 percent of the resource area's aspen type would improve understory and canopy components on blue grouse brood and summer use habitats in the short and long term on a proportionate, but localized basis in the Piceance and Danforth/Jensen GRAs.

Applying road density limitations (i.e., ferret recovery areas and big game critical habitats) would reduce the current extent of sage grouse nesting habitat vulnerable to disruption from road-based activities by up to 5 percent. Through and beyond plan life, these restrictions would stabilize or slightly reduce current levels of road-related nest disruption on 10-15 percent of nest habitat in the Piceance, Douglas/Cathedral and Blue Mountain GRAs and 32 percent of those in the Wolf Ridge/Red Wash GRA.

Applying TL and NSO stipulations would continue to maintain annual sage grouse breeding activities at levels comparable to Alternative A, but by extending protection to important features in the vicinity of leks, help maintain lek site characteristics and suitability in the long term. Establishment of the Moosehead Road Closure area NSO would preclude adverse surface disturbance on up to 10 percent of grouse production and brood areas in the Blue Mountain GRA, and 45 percent of its aspen type, as a key component of blue grouse brood and general summer habitat.

Alternative C

Reducing big game population objectives, implementing grazing use goals on nest and brood ranges and watershed improvements would enhance herbaceous cover and forage availability on up to 76 percent of the resource area's grouse nest and brood habitats through and beyond plan life. Enhanced nest success and chick recruitment, attributable to improved ground cover and herbaceous forage, would have an indeterminate, but substantial long-term beneficial influence on grouse populations.

Sagebrush modifications would be similar to that described in alternative B. Applying grouse habitat guidelines as integrated with sagebrush forage retention (i.e., big game) guidelines and maintenance of mid-seral sagebrush canopies that provide important grouse-related values would relegate short-term losses to Alternative A's low to midpoint values.

Limiting aspen harvest to projects that enhance long-term stand age diversity and understory composition would maintain or improve the long-term utility of up to 20 percent of aspen-based blue grouse brood and summer use habitats available in the resource area.

Expanding road density limitations to all big game habitats

would reduce the current extent of sage grouse nesting habitat vulnerable to disruption from road-based activities by up to 5 percent and generally stabilize current levels (estimated at 20 percent) of road-related nest disruption all nest habitat through and beyond plan life.

Application of TL and NSO stipulations would maintain annual sage grouse breeding activities and protect lek site character at levels comparable to Alternative B. Application of a nest season TL stipulation within sage grouse nest habitat would allow an average 68 percent of annual nest attempts to succeed within individual lek complexes.

Implementing various NSO and No-Lease areas for ACECs would preclude adverse surface disturbance on 12-14 percent of grouse production and brood areas in the Blue Mountain GRA, and 48 percent of its aspen type, as a key component of blue grouse brood and general summer habitat.

Alternative D

Cumulative impacts would be the same as described for Alternative C except there would be a slight increase (35 percent vs. 30 percent) in the herbaceous cover and forage available for grouse nest and brood habitats. In addition, sagebrush reestablishment on undesirable modification events over 500 acres would accelerate long-term restoration of habitats for year-round use, but possesses weaknesses in abbreviating the potential cumulative influence of small clumped events as in Alternative C.

IMPACTS ON FISHERIES MANAGEMENT

IMPACTS FROM FISHERIES MANAGEMENT

Alternative A

Protecting and enhancing riparian habitat through fencing and in-stream structures would improve fisheries conditions on 7.6 miles of Colorado cutthroat trout habitat in Soldier and Lake Creeks (about 50 percent of the resource area's cutthroat fisheries and representing 23 percent of total cold water stream fisheries) from poor to fair condition. Warm-water pond fisheries would be maintained or enhanced through fencing and ungulate/livestock management.

Applying NSO stipulations to the Lake and Soldier Creek valleys would protect 23 percent of all stream fisheries from incompatible surface disturbance. Applying NSOs to active beaver colonies would provide similar protection of stream segments, but beaver occupation of a stream is dynamic, and stream protection predicated on fluctuating animal distribution is not considered an effective means for long-term fisheries maintenance.

Imposing special reclamation and avoidance requirements on a case-by-case basis would minimize significant disruption of bank, channel, and floodplain components on remaining fisheries such that current fishery conditions are maintained.

Alternative B

Physical deterioration of aquatic habitats supporting stream or pond fisheries would be minimized on a case-by-case basis (as discussed under Alternative A) such that the long-term development potential of affected streams would be maintained and significant physical disruption would be minimized.

Maintaining protective fencing on Trapper's Creek would promote continued improvement on about 13 percent of the area's cutthroat fisheries.

Improving channel structure, bank stability, water temperature, prey abundance, and flow persistence on these stream fisheries would be achieved through intensified livestock and beaver management and riparian vegetation reestablishment.

All fisheries in poor condition would be improved and would increase the ratings of nearly all (97 percent) fisheries to at least fair condition in the short-term (year 2000) such that channel conditions are poised for subsequent development (i.e., woody vegetation expression, undercut banks) as quality fisheries. In the long term, and primarily attributable to cutthroat trout fishery objectives, the complement of streams in good condition would increase from 3 percent to 44 percent.

Improving riparian and aquatic conditions on these streams would enhance coexisting and downstream native fish populations, especially speckled dace. Acquiring potential or occupied fisheries and identifying all manageable stream segments with reasonable public access for channel improvement would expand BLM recreational fishing opportunity in the long term.

Alternatives C and D

Fishery improvement goals would be the same as described under Alternative B. Prohibiting all surface uses not compatible with aquatic and riparian restoration objectives pertinent to special status fisheries (mainly in the East Douglas drainage) would ensure that gains made in fisheries habitat quality would be additive and that constant long-term improvement on at least 47 percent of all stream fisheries could be expected.

Designating East Douglas Creek ACEC (encompassing about 90 percent of current Colorado cutthroat trout distribution in the resource area) would require an integrated site-specific activity plan which prescribes actions and uses that would promote the long-term maintenance and enhancement of native fisheries.

IMPACTS FROM SOILS, SURFACE WATER, GROUNDWATER, AND WATER RIGHTS MANAGEMENT

Alternatives A and B

Maintaining proper soil processes on rangelands and grazable woodlands would indirectly benefit adjacent and all downstream fisheries by reducing upland sediment yield (overland and gully) and minimizing sediment-related impacts (e.g., turbidity, streambed smothering, channel instability). attributes necessary to sustain a viable fisheries.

Stabilizing fragile watersheds and improving water quality in identified streams would help maintain and support preliminary improvement of aquatic conditions (e.g., channel restoration) on about 10 percent of stream fisheries (i.e., 21 percent of cutthroat trout habitat).

Protecting and mitigating impacts to groundwater supplies and securing water rights on over 60 percent of the resource area's fisheries would minimize loss or deterioration o base flows and water quality necessary to maintain or promote development of all stream fisheries.

Alternatives C and D

Impacts to fisheries would be the same as described under Alternatives A and B except NSOs and CSUs applied in landslide and fragile soil areas would further reduce sediment yield (attributable to surface disturbance) to all fisheries in the long term.

IMPACTS FROM OIL AND GAS MANAGEMENT

Alternative A

Applying NSO stipulations is effective in deterring physical damage on about 23 percent of all stream fisheries (i.e., 50 percent of Colorado cutthroat trout habitat). Negotiating post-lease avoidance and/or reclamation is adequate in preventing long-term damage to remaining fisheries.

Enforcing existing oil and gas regulations minimizes the risk of, and degree of potential damage from, the accidental discharge of petroleum contaminants to adjacent or downstream fisheries.

Alternative B

Relying solely on negotiated post-lease avoidance and/or reclamation would minimize introduction of occupied fisheries such that overall stream conditions could be maintained; although, the rate or trend of improvement may be stalled in the short term. Assuming oil and gas development would remain most prevalent within or on the periphery of established oil and gas fields, these measures would provide levels of fisheries protection comparable to that described under Alternative A.

Alternatives C and D

Applying a CSU stipulation to the proposed East Douglas Creek ACEC would ensure that oil and gas development would be compatible with fisheries improvement efforts on 38 percent of the resource area's cold-water stream fisheries. Preventing surface disturbance incompatible with riparian maintenance or improvement standards would generally maintain most current fishery conditions on remaining stream habitats. Collectively, these measures would prevent future oil and gas operations from contributing substantially as an impediment to fisheries recovery objectives.

IMPACTS FROM OIL SHALE MANAGEMENT

All Alternatives

Developing large-scale shale oil industry in the Piceance GRA would require significant water resources which would

result in the permanent loss or severe deterioration of nearly 50 percent of BLM stream fisheries.

IMPACTS FROM MINERAL MATERIALS MANAGEMENT

Alternatives A and B

Sand and gravel operations within or adjacent to the White River would be subject to review by the BLM, CDOW and U.S. Fish and Wildlife Service (USFWS) and stipulations or operating constraints necessary to prevent significant impacts to riverine conditions and associated fisheries would be imposed.

Alternatives C and D

Implementing proposed fisheries and riparian objectives, in addition to the management emphasis proposed for the White River and East Douglas Creek ACECs, would effectively preclude sand and gravel operations from exerting substantial short-term or measurable long-term influences on any fisheries.

IMPACTS FROM HAZARDOUS MATERIALS MANAGEMENT

All Alternatives

Removing known sources and taking measures to prevent the release of hazardous materials minimizes the risk of aquatic contamination (see also Impacts from Oil and Gas Management).

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

Alternative A

Maintaining rangelands and grazable woodlands in mid- to high-seral condition would indirectly benefit associated aquatic systems by stabilizing levels of sediment yield and minimizing sediment-related impacts to stream fisheries (e.g., turbidity, streambed smothering, stream channel instability).

Improving riparian systems in early successional states would provide preliminary recovery or improvement on up to 15 percent of Colorado River cutthroat trout habitat or 7 percent of all fisheries in the resource area.

Alternative B

Improving expansive mid-seral grassland and sagebrush ranges to high-seral conditions would likely reduce sediment yield and enhance infiltration and flow contribution) to most fisheries. Improving early-seral aquatic systems would have the same effects as described under Alternative A.

Alternatives C and D

Positive fisheries influences associated with improvement of early-seral condition communities would be the same as discussed in Alternatives A and B.

Reducing the extent of improvement slated for mid-seral sagebrush and saltbush communities would have minimal impact on fisheries that are normally coincident with higher elevation vegetation associations.

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Controlling noxious weeds (notably in cutthroat fisheries of the East Douglas drainage) as detailed in the *Vegetation Treatments on Public Lands Environmental Impact Statement* would contribute directly to improved fisheries conditions by decreasing sediment yield and accelerating channel and bank restoration processes.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Protecting 7.6 miles of Soldier and Lake Creek drainages (Douglas/Cathedral GRA) and 72 acres of riparian on the Roan Plateau via fencing would improve about 7 percent of the resource area's riparian extent and about 23 percent of its cold water fisheries. Improvement of riparian conditions in compliance with a Bureau-wide objective to restore 75 percent of riparian habitat to proper functioning condition by the year 2000 would enhance coincident fishery values by an

indeterminate amount.

Alternative B

High-priority riparian targets account for over 80 percent of the resource area's cold water fisheries, in addition to the warm-water impoundments. Implementing riparian objectives in conjunction with grazing limits would stabilize affected banks and restore functional floodplain and channel configurations, thereby establishing a strong foundation for additional fisheries restoration or improvement measures (e.g., woody canopies, further channel evolution).

Alternatives C and D

High- and medium-priority riparian targets would account for over 90 percent of the resource area's cold water fisheries. Requiring physical avoidance of riparian communities would improve riparian protection standards and complement the achievement of long-term improvement objectives established for general coldwater fisheries, rather than minimizing disturbance as in Alternatives A and B.

IMPACTS FROM TIMBER MANAGEMENT

Alternative A

Harvesting timber would have the greatest potential for influencing fisheries in the East Douglas Creek and Bitter Creek drainages (Douglas/Cathedral GRA), where spruce-fir forests comprise about 13 percent of headwater and tributary watersheds. In the short term, 1 percent or less of watersheds harboring Colorado cutthroat populations would be modified from harvest in the East Douglas drainage, with stronger involvement (6-7 percent) in the Brush Creek and Bear Park watersheds. Approximately 45-55 percent of this type would be modified in the long term, involving 7 percent of the East Douglas drainage up to one-third the Brush Creek and Bear Park watersheds, and from 3-5 percent of remaining tributary watersheds.

Timber harvesting in the Bitter Creek drainage would encompass about 15 percent of the watershed contributing to the Bitter Creek fisheries and would involve less than 1 percent in the short term and about 5 percent in the long term.

Harvest effects would tend to alter stream dynamics by increasing short-term sediment yield and spring flows. In the longer term, harvest effects would be expected to decrease current levels of sediment contribution (increased ground cover associated with canopy reduction) and increase base flows (increased infiltration on harvested areas)--both of which are conducive to improved fishery conditions.

Alternatives B, C, and D

Timberland management, in the context of commercial harvest, would have no measurable impact on fisheries management. All other forms of timber management would be compatible with fishery maintenance/improvement.

IMPACTS FROM WOODLANDS MANAGEMENT

Alternative A

Removing woodland canopies would improve vegetative cover and reduce erosional susceptibility on up to 27,000 acres, or about 6 percent of the Douglas/Cathedral GRA in the long term. Improving soil stability and vegetative ground cover on harvested areas would aid fisheries improvement by reducing sediment and increasing base flow contributions to downstream habitats.

Long-term harvesting of less than 1 percent of the woodlands in the Piceance GRA would have little to no influence on this GRA's fisheries.

Best management practices (BMPs) applied to commercial harvest operations would be sufficient to prevent direct impacts and minimize/abbreviate indirect impacts (e.g., siltation from harvested slopes and access roads) on affected fisheries to insignificant levels .

Alternative B

Harvesting pinyon/juniper would influence fisheries and contributing watershed conditions at levels comparable to Alternative A. Although clearcut acreage would be reduced by 74 percent, the extent of overall canopy modification would increase by 10 percent. Expanding harvest objectives in the Piceance GRA would reduce woodland management's potential for involving Colorado River cutthroat trout fisheries in the Douglas/Cathedral GRA.

Personal use firewood cutting would be prohibited within any riparian community, thereby avoiding adverse modification of canopy-related fisheries values (e.g., shading, nutrient/forage input).

Alternatives C and D

Potential watershed/aquatic effects attributable to woodland harvest would be limited to 20 percent of that derived in Alternatives A and B. Woodland harvest would remain available to correct localized watershed problems (e.g., deficient ground cover aggravating erosion and sediment yield) that may be adversely affecting fish habitat conditions.

Prohibiting personal-use firewood cutting within any riparian community would avoid adverse modification of canopy-related fisheries values (e.g., shading, nutrient/forage input).

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternative A

Implementing forage-enhancing woodland treatments would improve vegetative ground cover on about 27,000 acres or about 2 percent of the resource area through plan life. Similarly, about 11 percent of shrub communities and about 16,000 acres of 1960s-era pinyon/juniper chainings, representing 5 percent of the resource area, would be manipulated. Shrubs often perform effectively in retaining moisture on-site, prolonging soil moisture residency, and reducing soil puddling; however, enhancing herbaceous production and ground cover is generally believed superior for increasing infiltration available for baseflow contributions and improving soil holding properties -- characteristics important in maintaining or improving fishery conditions.

Alternative B

The effects of livestock-oriented forage enhancement treatments on aquatic and fisheries habitats would be the same as discussed in Alternative A.

Establishing compatible grazing practices on high-priority riparian systems would improve channel and floodplain functions on 80 percent of the resource area's fisheries and establishes the primary means for achieving prescribed fishery condition objectives.

Alternatives C and D

Livestock management's influence on fisheries would be similar to that presented in Alternative A, except that compatible livestock grazing practices would be applied to over 90 percent of the area's cold-water fisheries.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternative A

Providing forage necessary to sustain elevated horse numbers is comparable to 10-15 percent of forage currently allocated to prescribed numbers of livestock, horses and big game within affected allotments. Aggravating forage use may detract from herbaceous growth's functional capacity for erosion control and infiltration, subsequently increasing sediment yield and runoff intensity, and reducing sustained baseflow contributions to fisheries in the White River, Piceance Creek, and East Douglas Creek.

Alternative B

Confining wild horses to 39 percent of the area currently occupied would reduce overall grazing use in removal areas by 10-20 percent in the short term and add incrementally to watershed conditions favorable to native fish populations in the White River and its larger tributaries.

Alternative C

Proposed horse management would influence fisheries in a manner similar to that discussed in Alternative A, and would closely mimic the current situation.

Alternative D

In the short term, horse management's influence on non-game fisheries would be similar to that discussed in Alternative A.

Reducing long-term grazing intensity (by removal) by 4 to 8 percent across 24 percent of the Douglas/Cathedral and Piceance GRAs, would increase residual plant material by an estimated 2-5 percent. Decreased rates of vegetation removal would contribute to improved watershed function and the condition of downstream fisheries.

IMPACTS FROM BIG GAME

MANAGEMENT

Alternative A

Forage use by big game in excess of that allocated for in the Grazing EIS would represents up to 10-15 percent of the forage base reserved for watershed function, plant health, and small/nongame values and contributes to increased sediment yield and runoff intensity and reductions in sustained baseflow contributions to all fisheries.

Manipulating 70,000 acres of sagebrush, pinyon/juniper and mountain shrub communities to increase big game winter forage supplies would contribute to improved downstream fishery conditions by enhancing herbaceous ground cover and watershed function on up to 6 percent of the resource area.

Manipulating 12,750 acres of aspen and coniferous forest to increase big game summer forage supplies in the Piceance GRA may be conducive to long-term aquatic improvements on up to 22 percent of the resource area fisheries (i.e., reduced sediment contribution, enhanced base flows). However, achieving such targets through plan life may alter flow regimes sufficiently to induce destructive changes in channel stability and fisheries condition that would persist for extended periods of time.

Alternatives B, C, and D

Short-term consequences of big-game forage use and winter forage treatments on fisheries would be the same as discussed in Alternative A. The effects of big game use on herbaceous forage and watershed function would be reduced by a minimum 30 percent over plan life as prescribed livestock/big game forage, plant community, and forestry projects are fully implemented.

Manipulating up to 5 percent of aspen and coniferous forest as a means of diversifying canopy structure, increasing aspen composition, and improving subcanopy riparian conditions would contribute to localized improvement of watershed and channel conditions on up to 47 percent of occupied fisheries, while avoiding the potential effects of large-scale alterations.

IMPACTS FROM RECREATION, MOTORIZED VEHICLE TRAVEL AND ACCESS MANAGEMENT

Alternative A

Increasing recreational fishing access without adequate control may increase erosion and sedimentation, weed establishment, and deterioration of bank and wetland vegetation, similar to that found at the area's 2 warm-water ponds.

Leaving 98 percent of the resource area open to unregulated motorized vehicle travel would aggravate localized impacts to fishery habitats (e.g., sedimentation, slope instability, bank damage) by providing no means with which to control incompatible vehicle use or the continued and unplanned proliferation of roads and trails.

Alternatives B, C, and D

Imposing riparian and fisheries (including Colorado River cutthroat fisheries) management and protection standards on all fisheries would be sufficient to minimize bank and floodplain vegetation damage attendant to fishing and camping activities. Limiting vehicular travel to existing roads and trails (Alternative B) would stabilize, but not reduce, current levels of road-related influences on fisheries. Closing unnecessary vehicular traffic in riparian areas, and confining use to designated roads and trails (Alternatives C and D), would reduce or eliminate localized instances where roads are contributing to slope and channel instability.

Acquiring and controlling access to manageable fisheries (e.g., Bitter Creek, West Fawn, Clear Creek) compatible with fisheries and riparian management objectives would avoid the consequences of intensive unregulated recreational fishing use in these areas.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

Alternatives A and B

Continuing to make 1,174,100 acres (alternative A) and 949,000 acres (alternative B) of Category 2 land available

for conditional exchange would offer a potential means of consolidating an appropriate land base where more cohesive riparian/aquatic and watershed management can be applied to fisheries resources.

Alternative C

A total of 839,730 acres of Category 2 land would be available for conditional exchange (a decrease of 334,370 acres from Alternative A). The conditions of exchange and potential impacts on fisheries would be similar to those discussed in Alternative A. Due to fragmented nature of fisheries in this resource area, acquisitions offer a potential means of consolidating a land base where more cohesive riparian/aquatic and watershed management can be applied to fisheries resources.

Retention status conveyed to ACECs would, in the case of the proposed East Douglas Creek ACEC, solidify maintenance of the land base most important to the recovery of Colorado River cutthroat trout in this resource area, and would ensure that any potential acquisitions represent gains toward a consolidated fisheries base.

Alternative D

Impacts would be similar to Alternative C except that a total of 1,300,500 acres of Category 2 land would be available for conditional exchange (an increase of 126,400 acres from Alternative A).

CUMULATIVE IMPACTS ON FISHERIES MANAGEMENT

Alternative A

Applied fisheries/riparian/watershed management (including plant community, water quality and noxious weed objectives) promotes herbaceous riparian development and improved channel/floodplain conditions but is generally insufficient to prompt woody expression necessary for optimal fishery conditions. Bank, channel and floodplain conditions on poor condition fisheries would continue to improve, elevating fishery habitats in fair condition to about 80 percent. With relatively static trends in woody riparian development, it is unlikely that good fisheries conditions would be achieved on more than 15 percent of stream habitats through plan life.

Increased ground cover derived from vegetation manipulations, watershed treatments, and horse removals would improve overall watershed function on up to 30 percent of the resource area and promote long-term decreases in upland sediment transport (i.e., vegetation derived soil stability) and increased base flow contributions (i.e., enhanced infiltration) to all fisheries.

applying case-by-case mitigation or avoidance measures minimizes physical disruption of channel and floodplain features sufficiently to prevent overall deterioration of fisheries condition.

Although unlikely that oil shale development would occur through plan life, surface disturbance, base flow reductions and long-term aquifer disruption attending full scale development may lead to the long-term loss of over 50 percent of all stream fisheries, including up to 35 percent of Colorado River cutthroat trout fisheries.

Alternative B

Improving bank and floodplain vegetation composition, density, and vigor through livestock and vegetation management techniques would improve channel and floodplain conditions such that all occupied streams with poor fisheries rating would be elevated to fair condition through plan life. Increased emphasis on the development or reestablishment of woody vegetation expression through fisheries, plant community, and riparian management objectives would increase the complement of streams in good fisheries condition to 30 to 40 percent.

Increases in ground cover and soil stability attributable to improved livestock and big game distribution, horse removals, vegetation manipulations, and watershed treatments would contribute to improved watershed function on up to 55 percent of the resource area and promote long-term reductions in sediment transport and increases in base flows contributed to adjacent and downstream fisheries, including the White River and its larger tributaries.

Physical disruption of habitat would be minimized or mitigated sufficiently to maintain existing habitat condition. Riparian and fisheries management and protection standards would be sufficient to stabilize overall recreation and roadbed/vehicle-related detriments. Strong localized impacts would persist where road abandonment or restricted vehicle use provide the only effective means to arrest continued habitat deterioration.

Alternatives C and D

Fisheries improvements and the cumulative influence of land treatment prescriptions (e.g., grazing use, watershed improvement, vegetation manipulations, noxious weed control) on watersheds or channels contributing to fish habitats would be the same as those identified in Alternative B.

Requiring surface disturbance within all riparian communities and the East Douglas Creek ACEC to be conducted or conditioned in manners compatible with fisheries, aquatic or riparian improvement objectives would deter short term setbacks in improvement trends and ensure constant, additive gains toward recovery goals in all occupied fisheries. Additionally, limiting surface disturbance on fragile soils and landslide areas (e.g., NSO stipulation) and providing means to control incompatible access or vehicle use would prevent chronic sediment contribution and long-term channel disruption attributable to disturbance-induced erosion and mass wasting.

IMPACTS ON SPECIAL STATUS WILDLIFE MANAGEMENT

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

Alternative A

Requiring consultation for any federal action that may affect listed or proposed threatened or endangered species would include the development of binding conservation measures considered necessary to avoid, minimize or offset disruptive influences or adverse modification or loss of associated habitats such that the proposed action would not jeopardize the continued existence of the species.

Listed Species

Listed Colorado River Fishes. A recent programmatic biological assessment commits BLM to the reporting and tracking of water consumed (i.e., depleted) from the Upper Colorado River Basin and its special status fish habitat. Prior to authorizing land use proposals that may degrade important elements of designated critical habitat (i.e., within White River's 100-year floodplain), a case-by-case evaluation in consultation with USFWS would ensure, through project denial or application of special stipulations or Conditions of Approval, that pertinent floodplain features and processes remain unimpaired.

Black-footed ferret. Minimizing the destruction or involvement of prairie dog burrow systems and conducting USFWS-approved ferret surveys, often as precursors to Section 7 consultation with the USFWS, maintains current habitat extent and suitability and prevents potential direct ferret mortality. The same principles are being applied to maintain existing prairie dog colonies as suitable ferret reintroduction and recovery habitat.

Bald eagle. TL stipulations applied to nest sites and a 0.5-mile river corridor is generally adequate to prevent disruption of roosting and/or nesting functions. Prohibiting land uses which reduce the quantity or quality of riverine woodlands (cottonwood galleries) suitable for bald eagle roost or potential nest substrate maintain the short term availability of preferred habitats. Application of nest site NSO stipulations effectively maintains nest habitat suitability.

Mexican spotted owl. The discovery of Mexican spotted owl in the resource area would require *Endangered Species Act* consultation to assess the options necessary to protect and maintain populations and habitats.

Species Candidate for Listing. Federal actions which may affect candidate species are analyzed individually or incorporated with Section 7 Consultations. Protecting habitats and populations of such species as sharp-tailed grouse, northern goshawk, ferruginous hawk, mountain plover, loggerhead shrike, western boreal toad, and Colorado River cutthroat trout is necessary to avoid continued deterioration of important habitats and subsequent listing as threatened or endangered.

Introduction of sharp-tailed grouse in Piceance Basin is a management objective within the Piceance Basin HMP. Although habitat suitability analysis has not been performed, based on habitat character, BLM believes there is little likelihood for successful establishment of a sharp-tailed grouse population in Piceance Basin.

Applying NSO stipulations to Soldier and Lake Creek deters direct physical damage or deterioration of about 50 percent of the waters currently occupied by candidate populations of Colorado cutthroat trout, and may provide a small degree of coincident protection on stream segments potentially occupied by western boreal toad.

Applying TL stipulations is adequate to prevent disruption of ongoing nesting functions of candidate raptors. Due to the nature of habitat selected by ferruginous hawk and northern goshawk, NSOs are not fully effective in preventing modifications in nest site character detrimental to the continued suitability and occupation of nest sites.

Alternative B

Listed Species

Bald Eagle. Expanding NSO buffers to winter roost sites in addition to nest sites would effectively maintain short term nest and roost site utility. Expanding TL buffers on nest sites, and extending the same protection to winter roost sites, would provide relatively risk-free protection of roost and nest activities.

Minimizing adverse modification or occupation of cottonwood communities, regardless of their current status as bald eagle habitat, and encouraging development of riverine cottonwood galleries on floodplain parcels would promote long-term roost and nest site development and increase the extent of suitable bald eagle habitats on public land by a minimum 50 percent. Expansion of BLM's bald eagle habitat base would be pursued as opportunities become available. Riverine parcels which possess winter roost or nest site values would be identified as a priority acquisition criterion.

Black-footed Ferret. Delineation of 2 black-footed ferret recovery areas in the Wolf Ridge/Red Wash GRA would encompass about 50 percent of the resource area's prairie dog habitat. Designation of recovery areas is preliminary to the successful reintroduction and establishment of a self-sustaining ferret population consistent with BLM mandates and policy. Application of a CSU stipulation within recovery areas would provide the framework to maintain a viable ferret prey base and reduce ferret mortality, predation, and disruption of reproductive activities to negligible proportions. Reintroduction activities would remain subject to development and subsequent approval of an interdisciplinary recovery plan. Minimizing the disruption of suitable ferret habitat (i.e., prairie dog colonies) outside recovery areas would allow for ferret dispersal and expanded colonization and provide continuity with potential ferret habitat in Utah.

Managing prairie dog ecosystems for ferret reintroduction would help maintain current populations of other special status species that rely on prairie dogs as a source of prey (e.g., ferruginous hawk), maintained burrow systems (e.g., burrowing owl) or low stature vegetation induced by prairie dog grazing (e.g., mountain plover).

Colorado River fishes. Same as Alternative A.

Candidate Species

Colorado River cutthroat trout and other candidate fish species. Proposed management of Colorado River cutthroat trout is integral with the fisheries management section. Implementing compatible livestock grazing practices, reestablishing riparian vegetation, and managing beaver use would improve fisheries condition on all occupied streams from poor to good condition within plan life. Enhancing upstream aquatic conditions would provide direct or indirect benefits for other candidate populations of fish or riparian associates (e.g., flannelmouth sucker, roundtail chub, boreal toad).

Acquisition of native cutthroat trout habitat would be a priority acquisition criterion.

Sharp-tailed grouse. Participation with the State and other interested parties would be considered on case-by-case basis as opportunity warrants for reestablishing or augmenting sharp-tailed grouse populations.

Candidate raptors. Increasing NSO and TL buffers would provide generally risk-free protection of ongoing nesting activities. Applying nest habitat provisions would maintain the utility of known nest habitats for extended periods.

Alternatives C and D

Depletion issues associated with listed and candidate Colorado River fishes would be the same as described for Alternative A.

Establishing the White River ACEC would encompass all BLM managed riverine bald eagle habitats and floodplains designated as critical habitat for the Colorado squawfish. Managing the ACEC with emphasis on the improvement, maintenance, and protection (CSU) of riverine floodplain associations and processes is consistent with the protection and enhancement of channel and floodplain functions as squawfish habitat and the development and sustained availability of bald eagle winter roost and nest substrate. Bald eagle and nest protection standards (NSOs and TLs) would be the same as those in Alternative B.

Management of ferret recovery areas would differ little from

Alternative B. Restricting land-use activities within ferret recovery areas (CSU) would reflect increased emphasis on not only maintaining but enhancing the capability for achieving ferret recovery goals (e.g., requiring compensation for deterioration of suitable habitat extent or quality). Allowing only those land uses that maintain the long-term viability of prairie dog ecosystems outside defined recovery areas would maintain the availability of habitats suitable for ferret dispersal and colonization as well as continuity with large prairie dog systems in Utah.

Habitat recovery and improvement objectives for Colorado River cutthroat trout would be the same as Alternative B. Designating the East Douglas drainage above Cathedral Creek as an ACEC captures 90 percent of the resource areas native trout habitat and would prompt development of an integrated activity plan prescribing actions and uses compatible with the long-term maintenance and enhancement of these native fisheries. Expanding the protection of occupied East Douglas fisheries through a CSU stipulation would ensure that gains made in fisheries habitat quality would be additive, and that constant long-term improvement could be expected. Road density limitations (1.5 miles/square mile) would be imposed on this ACEC to aid in decreasing motorized vehicle-related impacts to this fishery.

Protection standards (i.e., NSO and TLs) equal to Alternative B would be applied to candidate raptors (e.g., ferruginous hawk and northern goshawk). Preventing significant long term deterioration of nest habitat within 0.5 mile of nest sites would maintain the suitability of preferred nest habitats for extended periods of time.

IMPACTS FROM SOILS, SURFACE WATER, GROUND WATER, AND WATER RIGHTS MANAGEMENT

Alternative A

Maintaining or improving soil stability and its productive capacity would complement the long-term maintenance and enhancement of habitats for all special status species. Soil management practices (e.g., channel restoration) regularly involve reservoir or pit development which depletes small quantities of water (i.e., annual increments of less than 2 acre-feet per year) from the Upper Colorado River system's listed fish habitats, and may contribute to cumulative depletion impacts discussed in Chapter 3.

Improving or maintaining watersheds in an effort to meet state and federal water quality standards (e.g., reduce sediment and salinity contribution) would complement recovery goals for listed fish habitats in the Upper Colorado River Basin and contribute to the improvement of up to 20 percent of the resource area's Colorado River cutthroat trout habitat. Portions of the White River designated as critical habitat, as well as its major tributaries, are explicitly prioritized for special management consideration.

Improving watersheds in low-elevation sagebrush, saltbush and greasewood communities in the Wolf Ridge/Red Wash GRA would benefit the long-term suitability of ferruginous hawk habitats. Conversely, significantly modifying large, incised greasewood/sagebrush drainage systems (favored habitat of loggerhead shrike) would reduce local breeding densities of shrike in the long term.

Applying BMPs and protection measures would minimize loss or deterioration of base flows which are necessary to develop, maintain, or enhance aquatic, riparian and wetland communities associated with candidate and listed fish and possible western boreal toad populations. Securing water rights on appropriate streams and impoundments would ensure that water sources which occur or are developed on federal land are retained and remain available to support special status species management. Water rights held or acquired by the BLM may be used (i.e., transferred to the USFWS) to offset the effects of BLM-authorized depletions on listed Colorado River Basin fish.

Alternatives B, C, and D

Impacts from soils and water management would be the same as Alternative A, except that by integrating habitat objectives and the CSU associated with prairie dog ecosystems and black-footed ferret recovery salinity project work in the Wolf Ridge/Red Wash GRA would complement efforts to maintain or enhance the suitability and capacity of these habitats for ferret reestablishment and occupation.

IMPACTS FROM OIL AND GAS AND LAND USE AUTHORIZATIONS MANAGEMENT

Alternative A

Negotiated post-lease avoidance and/or mitigation applied to oil and gas operations is adequate in minimizing short term and preventing long term physical deterioration of special

status fish habitats. Depletion impacts to listed Colorado River fishes pertinent to oil and gas industries use of water has been rectified through formal Section 7 Consultation (see discussion in Chapter 3). Regulating the handling, transport, and accidental release of toxic materials associated with oil and gas development through existing laws and regulation is sufficient to minimize, to the extent practicable, risk of aquatic contamination.

Applying siting, mitigation, and reclamation requirements to oil and gas development prevents significant long-term reduction to the extent or distribution of prairie dog colonies as potential black-footed ferret habitat. Requiring project-specific ferret surveys avoids animal loss.

Applying NSOs, TL buffers and/or habitat provisions to ferruginous hawk and bald eagle nest and roost sites is effective both in preventing modifications in nest and/or roost site character, and preventing disruption of reproductive efforts or winter roost activities. Consultation with the USFWS, if spotted owl inhabitation were confirmed, would identify measures needed to prevent significant deterioration of breeding habitats or disruption of reproductive efforts.

Applying NSO and TL buffers to northern goshawk nests provides effective protection of ongoing nest efforts, but are incapable of maintaining subsequent nest habitat utility.

Alternative B

Oil and gas-related influences on Colorado River cutthroat trout and other species associated with aquatic or riparian habitats would be similar to those discussed in Alternative A.

Applying cutthroat trout habitat improvement goals as minimum riparian management objectives would strengthen negotiated post-lease avoidance and/or reclamation (issued as Conditions of Approval) such that oil and gas development would, to the extent practicable, remain compatible with improvement efforts.

Achieving or maintaining proper functioning channel and floodplain conditions in designated critical habitats for listed Colorado River fishes along the White River would be adopted as a minimum performance standard. Instituting measures through Conditions of Approval and Section 7 Consultation (e.g., siting modifications or moves exceeding 200 meters) would prevent adverse floodplain or channel alterations. Oil and gas development's involvement with depletion issues and its potential for water contamination would be the same as Alternative A.

Applying the CSU stipulation to ferret recovery areas would accommodate continued oil and gas development while maintaining the suitability and capacity of these areas for ferret establishment and associated habitat of other special status species (e.g. ferruginous hawk). In the event a ferret reintroduction and recovery plan is successfully adopted, additional ferret protection provisions may be incorporated through a RMP amendment.

The use of TLs, NSOs, and the nest habitat provision, as applied to raptors, are described in the Oil and Gas Management-Raptors section. Special status raptors, such as ferruginous hawk and northern goshawk, would be afforded larger NSOs capable of preventing adverse habitat modification in the vicinity of functional nest sites and ensuring that nest habitat integrity would be maintained in the short term. Minimizing adverse modification of nest habitat within 0.5 mile of functional nest sites would impart an additional measure of protection which would help retain suitable nest site characteristics in the long term.

Expanding TL buffers (0.5 mile for goshawk, 1.0 mile for ferruginous hawk) and timeframes would effectively prevent disruption of ongoing reproductive activities, including successful dispersal of young.

The short-term utility and function of roost and nesting sites for bald eagle would be protected through NSO stipulations. Expanding TL buffers to insulate identified bald eagle winter roosts from disruptive influences would be fully effective in preventing disruption of roost activities, including events that necessitate the use of aircraft. Minimizing the removal of any cottonwood association and requiring, through Conditions of Approval, that long term site potential is restored would promote the development and sustained availability of suitable cottonwood habitats.

Alternatives C and D

Impacts would be similar to Alternative B, with the following exceptions: Requiring maintenance of select aquatic parameters within the East Douglas ACEC through a CSU stipulation would minimize incompatible short term influences on 90 percent of the resource area's cutthroat habitats, and would require reclamation or mitigation commitments such that residual development impacts would remain inconsequential to fisheries condition or trend in the long term. Activities that are not compatible with fisheries restoration and maintenance objectives would be prohibited. Limiting road density in the East Douglas ACEC would

limit sediment yields from associated watersheds and provide the means necessary to arrest localized road-related sedimentation impacts.

Standards for the maintenance and development of cottonwood habitats for bald eagle use would be the same as Alternative B, but would be applied as a binding lease stipulation.

IMPACTS FROM OIL SHALE AND SODIUM MANAGEMENT

All Alternatives

Oil shale development would deplete large quantities of water from the upper Colorado River Basin and would impact Colorado squawfish and other listed and candidate species. Anticipated effects have been considered and integrated within the draft Endangered Fish Recovery Program (USFWS, 1986). Oil shale projects invariably require formal Endangered Species Act consultation with the USFWS, where impacts to all listed species would be thoroughly analyzed on a case-by-case basis. Depletion influence on round-tailed chub and flannelmouth sucker populations in the White River are unknown, but it is reasonable to assume that deteriorated riverine conditions would depress, but not extirpate, current populations.

Adverse modifications to riverine bald eagle habitats along the White River (e.g., dam construction) would be minimized or offset via stipulations developed through Section 7 consultation, such that oil shale development would not interfere with regional recovery or population goals established by the USFWS.

It is likely that full scale oil shale development would reduce base flows of occupied cutthroat trout streams through surface water diversion or disruption of groundwater systems. Although minimum in-stream flows are protected in most occupied streams, current fisheries potential would likely adjust (i.e., down-size) to diminished stream capacity. This reasoning would also extend to populations of other candidate species with aquatic, wetland, or riparian affinities in the Piceance and Douglas/Cathedral GRAs (e.g., potential western boreal toad populations).

Sodium mining operations contribute to flow depletions from the Upper Colorado River system's listed fish habitats (see discussion in Chapter 3).

Development of oil shale and sodium contributes to the long-term reduction of pinyon/juniper habitats occupied by wintering and breeding populations of northern goshawk (see Impacts from Oil Shale and Sodium Management on Non-T&E Raptors).

IMPACTS FROM COAL MANAGEMENT

All Alternatives

Consumptive water use for coal processing would contribute to flow depletions from listed and candidate fish habitats in the Upper Colorado River Basin. Mitigation strategies developed through the Recovery Plan would be sufficient to offset depletion-related habitat deterioration.

Impacts to ferruginous hawk nest habitats are discussed in the Coal Management-Raptors section. Surface mining in either the Rangely or Danforth Study Area would exert strong local influences on the availability of pinyon/juniper and aspen types suitable for breeding and foraging functions of woodland adapted raptors, including the northern goshawk (see Coal Management-Raptors).

Similarly, any surface mine activity in the Danforth Study Area would likely involve aspen and mixed brush communities potentially occupied by remnant populations of sharp-tailed grouse.

IMPACTS FROM MINERAL MATERIALS MANAGEMENT

Alternative A

Applying land use decisions and surface stipulations (TL and NSO) pertinent to bald eagle habitats along the White River are generally sufficient to prevent mineral material operations from adversely affecting winter use activities or potential breeding efforts.

Prohibiting activities that reduce the quantity or quality of riverine woodlands as bald eagle habitat does not provide for the development and long-term availability of the type. Gravel mining and subsequent reclamation on non-wooded floodplain sections would offer opportunities to create or promote riparian communities where none previously existed, possibly increasing habitats suitable for migratory populations of other special status species (e.g., white-faced ibis, sandhill crane, and black tern).

Implementing conservation measures derived through case-by-case Section 7 Consultation would be sufficient to reduce or offset to acceptable levels adverse physical disruption of floodplain and channel features designated as critical habitat for Colorado squawfish.

Alternative B

Expanding NSO protection to 1 of 3 bald eagle roosts located within the sand and gravel area and expanding TL buffers (0.5 mile) would provide relatively risk free protection to all 3 bald eagle roosts from incompatible federally-approved activities. Minimizing the adverse alteration or removal of cottonwood communities (regardless of status) and, in the event of unavoidable involvement, requiring that reclamation necessary to restore the site's long-term potential be conducted would promote the sustained availability and long-term development of cottonwood habitats for bald eagle use.

The effects of sand and gravel operations on remaining special status species and their associated habitats are identical to those discussed in Alternative A.

Alternatives C and D

Stipulations designed to prevent disruption of bald eagle roost and nest activities would continue to be applied as in Alternative B.

Applying a CSU stipulation to the entire White River ACEC would require, in part, that project proponents minimize involvement of cottonwood communities and demonstrate that the potential of affected floodplain areas to support or develop riverine woodland communities is not impaired. Implementing land use objectives for the maintenance and enhancement of riparian condition and function (e.g., bald eagle CSU, riparian management) would prevent incompatible use or development of BLM-managed portions of the White River's 100-year floodplain as designated critical habitat for Colorado squawfish.

IMPACTS FROM HAZARDOUS MATERIALS MANAGEMENT

All Alternatives

Removing and/or preventing hazardous material release would have the obvious benefit of minimizing potential direct mortality or adverse effects on reproductive or behavioral functions of special status species.

IMPACTS FROM PLANT COMMUNITIES MANAGEMENT

Alternative A

Maintaining mid- to high-seral condition communities and improving low-seral condition ranges, which better reflect natural community characteristics, would enhance (<5 percent) nesting and foraging habitat capacity of northern goshawks and ferruginous hawks, improve habitat suitability and capacity on up to 8 percent of lands potentially occupied by black-footed ferret, and enhance up to 11 percent of BLM-managed loggerhead shrike habitat.

Alternative B

Improving up to 50,340 acres of Wolf Ridge/Red Wash GRA's early and mid-seral shrub communities would enhance up to 82 percent of loggerhead shrike habitat. Canopy modifications necessary to promote desired changes would be limited to about 2 percent of suitable habitat elements and would constitute a possible, but very minor, short-term reduction in habitat extent.

Treating upland sagebrush, saltbush and greasewood canopies within prairie dog complexes in the Wolf Ridge/Red Wash GRA would promote stability in existing prairie dog populations, and may expand the suitable extent of potential black-footed ferret habitat by up to 13 percent in the long term. Long-term improvements in herbaceous forage available to prairie dogs would be expected on 52 percent of the proposed ferret recovery areas, slightly increasing ferret capacity in response to a more stable prey base.

Improving herbaceous forage within the greasewood, saltbush, and sagebrush types would also improve the stability and availability of prey populations on about 40 percent of the breeding range of ferruginous hawk. Improvements would be applied on up to 35 percent of woodland raptor habitats, including those of northern goshawk.

Alternatives C and D

Modified plant community objectives would be most influential on those species associated with Wolf Ridge/Red Wash GRA's lower elevation saltbush-greasewood-sagebrush

complex. Maintaining mid-seral canopy-related values for sage grouse and big game (i.e., , pronghorn and deer) would presumably reduce the magnitude of potential habitat improvement realized by loggerhead shrike to 50 percent.

Similarly, mid-seral management applied in the interest of big game, sage grouse and loggerhead shrike would limit the potential extent of improved black-footed ferret and ferruginous hawk habitat to 30 percent and 25 percent, respectively. Potential expansion of suitable habitat within the ferret recovery areas may approach 5 percent.

IMPACTS FROM NOXIOUS AND PROBLEM WEEDS MANAGEMENT

All Alternatives

Controlling noxious weeds as detailed in the Vegetation Treatments on Public Lands EIS, would improve the condition of Colorado River cutthroat trout fisheries in the East Douglas drainage by decreasing sediment yield and speeding channel and bank restoration.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Improving high and medium priority riparian systems to PFC by the year 2000 would reduce sediment contribution and enhance base flows to downstream river habitats in the long term. These effects would help promote reestablishment of historic flow regimens, floodplain and channel stability and diversification of in-stream habitat features (e.g., pools) in the White River and larger tributaries inhabited by listed and candidate fish populations.

Improving high priority riparian systems would contribute to long-term enhancements in base flow and/or channel configuration in all cutthroat fisheries and would also complement enhancement of habitats favored by bald eagle and western boreal toad.

Alternative B

Extending explicit riparian maintenance, restoration, and/or protection emphasis to over 90 percent of Colorado River cutthroat trout fisheries, all bald eagle cottonwood habitats, and floodplain designated as critical habitat for Colorado squawfish along the White River, would affirm BLM's alignment with recovery objectives established for these species. Applying long-term riparian objectives to high and medium priority riparian systems would contribute to the extent and quality of habitat available to those candidate species associated with riparian communities (e.g., boreal toad), and more indirectly, to the enhancement (e.g., base flow contribution, sediment reduction) of special status fisheries confined primarily to downstream aquatic systems.

Riparian objectives would complement cutthroat fisheries improvement standards. Grazing use limits, particularly herbaceous use during the late summer and dormant season, may be insufficient to promote recovery of channel and bank conditions at rates commensurate with fisheries objectives and may require adjustment pending monitoring studies. Browse use limits may also be excessive, but provide a basis to prevent downward trends from ungulate browsing and beaver use. Applying use standards would intensify monitoring efforts and facilitate investigations of the relationships between vegetative conditions and its influence on channel, floodplain, and bank development. Similarly, riparian objectives would promote the maintenance and perpetuation of BLM-managed bald eagle habitats along the White River by fostering development of floodplain sites suitable for cottonwood regeneration and minimizing adverse alteration of such regeneration by any land use activity.

Alternatives C and D

Riparian management emphasis would affect special status species the same as Alternative B, except that riparian improvement objectives would apply specifically to medium priority systems and include virtually all cutthroat fisheries.

Treating high and medium priority riparian systems would result in substantial improvements on up to 62 percent of current riparian acreage through plan life, and would contribute increasingly to the extent and quality of habitat available to those candidate species associated with riparian communities (e.g., boreal toad) and, more indirectly, to the enhancement (e.g., base flow contribution) of candidate and listed fish habitat confined primarily to downstream aquatic systems.

Permitting only those surface activities compatible with riparian management objectives would accelerate progress in attaining desirable channel, floodplain, or vegetative features conducive to the protection or enhancement of special status species habitat management.

IMPACTS FROM SPECIAL STATUS PLANTS AND ACEC MANAGEMENT

Alternatives A and B

Management of ACECs, remnant vegetation areas and special status plants would have no influence on special status animals.

Alternatives C and D

Management of ACECs established for special status plants would have no influence on special status animals.

Protecting remnant vegetation associations through NSO or CSU stipulation in the Oil Spring Mountain and Moosehead Mountain ACECs would reserve from adverse modification 2 percent of Douglas GRA's spruce-fir community and 48 percent of aspen communities int he Blue Mountain GRA as favored goshawk nesting and foraging habitat.

Management of the White River and East Douglas Creek ACECs and it's influence on the habitat of bald eagle, Colorado River fishes, and Colorado River cutthroat trout are presented in appropriate wildlife sections.

IMPACTS FROM TIMBER MANAGEMENT

Alternative A

Harvesting timber on a 100-year rotation would convert stands to a relatively young age class with even-age characteristics, and would create suboptimal conditions for expansion or development of habitat suitable for birds requiring mature to over-mature, multi-story canopies, including the northern goshawk. Approximately 44 percent of all similar habitat occurring in the Area would be affected and would likely depress nesting and foraging capacity by 45-65 percent.

Harvesting timber would have the greatest potential for influencing Colorado River cutthroat trout fisheries in the East Douglas Creek drainage (Douglas GRA). See Impacts from Timber Management on Fisheries for discussion.

Alternative B

Harvesting timber would reduce the availability of suitable nesting and foraging habitat for woodland-dwelling raptors, including northern goshawk, by up to 5 percent area-wide. Disruption of occupied nest habitats and ongoing nest activities would be avoided through the application of appropriate stipulations and habitat objectives. Commercial harvesting of timber would have no measurable impact on cutthroat fisheries. Managing timber for other resource values (e.g. riparian) would complement habitat maintenance and improvement goals established for this species.

Alternatives C and D

Impacts from the management of timber would be limited to the northern goshawk and discussion is provided in the raptor management section.

IMPACTS FROM WOODLANDS MANAGEMENT

Alternative A

Harvesting 22 percent of the resource area's pinyon-juniper woodlands would reduce the effective winter foraging and nesting capacity for mature canopy obligates (e.g. northern goshawk) by 4 percent int he short term and up to 40 percent in the long term (see Impacts from Timber Management on Raptors). These effects would be most pronounced in the Douglas/Cathedral GRA which would bear up to 66 percent of the harvest. Ongoing nest activities and short-term nest habitat utility would be adequately protected via application of NSO and TL stipulations and nest habitat provisions. In the event breeding populations of spotted owl are discovered in the resource area, it is assumed that effective plans for maintaining long-term habitat suitability for this species would be developed through Endangered Species Act requirements.

Manipulating stands of pinyon/juniper would result in long-term decreases in sedimentation and improved base flows which would contribute to the enhancement of Colorado cutthroat trout fisheries. Harvest-related manipulations would not be permitted within any riparian community, thereby avoiding adverse modification of canopy-related fisheries values (e.g., shading, nutrient/forage input) and bald eagle roost and nest substrate.

Alternative B

Harvesting woodlands would reduce the long-term availability of mature woodland habitats suitable for goshawk nesting and winter foraging use by about 16 percent. Because of the woodlands involved and related effects on available prey, reductions in effective habitat capacity are estimated at about 25 percent in the long term. Applying raptor nest stipulations and treatment restrictions within nest habitats would protect ongoing nest efforts and maintain the integrity of known nesting territories for extended periods.

Woodland harvest influences on Colorado River cutthroat trout fisheries would likely be reduced under this alternative (see Impacts of Woodland Management on Fisheries). Prohibiting harvest-related manipulations within any riparian community would avoid adverse modification of canopy-related fisheries values (e.g., shading, nutrient/forage input) and bald eagle roost and nest substrate.

Alternatives C and D

Harvesting woodlands would continue to affect special status species associated with mature woodland communities, including northern goshawk (see discussion in Woodlands and Timber Management-Raptors), and Colorado River cutthroat trout (see Impacts from Woodland Management on Fisheries), but at levels much reduced from Alternatives A and B. Harvesting would reduce mature pinyon/juniper types by about 1 percent in Piceance and Douglas/Cathedral GRAs. The long-term availability of woodland habitats suitable for nesting and winter foraging use by goshawk would be reduced by about 5 percent. Applying raptor nest stipulations and treatment restrictions within nest habitats would protect ongoing nest efforts and maintain the integrity of known nesting territories for extended periods.

Prohibiting harvest-related manipulations within riparian communities would avoid adverse modification of canopy-related fisheries values (e.g., shading, nutrient/forage input) and bald eagle roost and nest substrate.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternative A

Development of livestock waters would deplete less than 2 acre-feet per year from the Upper Colorado River system's listed fish habitats, but would contribute to cumulative depletion impacts as discussed in Affected Environment. Livestock grazing on isolated tracts within the White River's 100-year floodplain, a designated high priority system, would be managed consistent with maintenance or steady, long-term improvement of bank, channel and floodplain conditions as constituent elements of critical habitat for listed Colorado River fishes.

Implementing forage enhancement treatments may increase infiltration as baseflow contributions and improve soil holding properties in those watersheds harboring candidate fisheries.

Promoting the improvement of herbaceous ground cover and woody elements beneath woody canopies would improve vertical layering of vegetation essential for maintaining or enhancing prey conditions required by woodland raptors, including northern goshawk.

Manipulating 7 to 9 percent of noncommercial pinyon/juniper woodlands and 20 percent of the greasewood type would be capable of proportional involvement with the nesting and wintering functions of northern goshawk and the breeding habitats of loggerhead shrike.

Alternative B

Depletion impacts on listed and candidate fish habitat in and downstream of the White River attributable to livestock water development would be the same as discussed in Alternative A.

Livestock grazing's influence on the special status species associated with riparian and aquatic habitats (e.g., candidate fish, bald eagle) is integral with discussions in the Riparian Management-Special Status Species section.

Similarly, livestock management's short and long-term influences on northern goshawk habitats are presented in the Livestock Grazing-Raptors section.

Alternatives C and D

Depletion impacts on listed and candidate fish habitat in and downstream of the White River, attributable to livestock water development, would be the same as discussed in Alternative A.

Livestock management's influence on the special status species associated with riparian and aquatic habitats (e.g., candidate fish, bald eagle) is integral with discussions in the

Riparian Management-Special Status Species section in alternative C.

Similarly, livestock management's short and long-term influences on northern goshawk habitats are presented in the Livestock Grazing-Raptors section.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternative A

Reducing overall grazing loads in herd areas within the Piceance and Douglas/Cathedral GRAs by 10-15 percent would contribute to the enhancement of watershed function and herbaceous understory expression. These effects are pertinent to species associated with riparian and aquatic habitats (e.g., candidate fish, boreal toad) and shrubland or woodland habitats (prey base for candidate raptors) and are discussed in appropriate Fisheries and Raptor sections.

Alternatives B, C and D

The Fisheries and Raptors sections discuss the extent and potential influence of horse management on downstream fisheries and raptor-related prey bases. These discussions are pertinent to special status fish and northern goshawk in their respective alternatives.

IMPACTS FROM BIG GAME MANAGEMENT

Alternative A

Developing water sources for big game depletes less than 1 acre-foot annually from the Upper Colorado River system's listed fish habitats and contributes to cumulative depletion impacts discussed in Chapter 3.

Forage use by big game in excess of that allocated for in the Grazing EIS is calculated to comprise 10-15 percent of the area-wide forage base reserved for watershed function, plant health, and small/nongame values. Excessive big game use of herbaceous vegetation impairs watershed function, and by reducing infiltration rates and soil holding properties, contributes incrementally to reduced base flow and increased sediment yield to all fisheries. Similarly, reductions in standing herbage or residuum, as a forage or cover base for such species as prairie dogs and cottontail rabbits, would be capable of reducing the abundance or stability of prey populations important to ferruginous hawk and (potentially) black-footed ferrets.

Woody winter forage use by big game, at levels excessive for sustained plant vigor, detracts from the development or maintenance of subcanopy structure amenable to a stable prey or forage base for species associated with wooded or shrubland communities (e.g., northern goshawk, loggerhead shrike).

Manipulating timber and woodland vegetation for big game forage enhancement may have a detrimental affect on cutthroat trout fisheries in the Douglas/Cathedral GRA, downstream habitats for listed fishes (see Impact of Big Game Management on Fisheries), and would contribute to significant long-term reductions in northern goshawk habitat (see Impacts of Big Game Management on Raptors).

Alternatives B, C, and D

The potential influence of big game management on special status species is integral with discussions in the fisheries section (i.e., Colorado River cutthroat trout) and raptors section (i.e., northern goshawk) in their respective alternatives. Depletion impacts on listed and candidate fish habitat in and downstream of the White River attributable to big game water development would be the same as discussed in Alternative A.

IMPACTS FROM NON-T/E RAPTORS MANAGEMENT

Alternative A

Raptor management has little influence on special status species, with the exception of northern goshawk. Applying raptor management stipulations and land use provisions provide effective protection of ongoing nest activities, but is generally incapable of maintaining the utility of woodland nest habitats in the long or short term.

Alternative B

Minimizing adverse alteration of woodland nest habitats within 0.5 mile of goshawk nests would help maintain the utility of known nest habitats for extended timeframes. Special status species would otherwise remain unaffected by

raptor management.

Alternatives C and D

Reducing long-term deterioration of woodland nest and foraging habitats to acceptable levels, or where possible precluding such impacts, and requiring nest surveys of project proponents would minimize alteration of goshawk nest habitats most frequently occupied (i.e. increased detection) and would maintain the utility of known nest and foraging habitats over extended timeframes. Special status species would otherwise remain unaffected by raptor management.

IMPACTS FROM GROUSE MANAGEMENT

All Alternatives

Creating, improving, or restoring mesic meadows or riparian systems associated with grouse brood range would both complement and contradict recovery goals for listed Colorado River fishes. Riparian improvements would tend to reduce sediment and increase baseflow contribution to associated river systems, whereas water developments would deplete small quantities of water from the Upper Colorado River system and contribute to cumulative depletion impacts.

IMPACTS FROM FISHERIES MANAGEMENT

Alternative A

Current fisheries management is almost exclusively directed at candidate populations of Colorado River cutthroat trout. See Fisheries Management-Fisheries section for discussion. Fisheries management has no notable influence on other special status species.

Alternative B

Management associated with Colorado River cutthroat trout fisheries and indirect influences on downstream candidate and listed fisheries is discussed in the Fisheries section.

Alternatives C and D

Management associated with Colorado River cutthroat trout fisheries and indirect influences on downstream candidate and listed fisheries is discussed in the Fisheries section. Requiring surface uses within the East Douglas ACEC to be designed compatible with fisheries restoration objectives would prevent short-term lapses in improvement trends (i.e., preventing rather than minimizing incompatible land uses as in Alternatives A and B) and increase the likelihood that contributions to downstream candidate and listed fish habitats (e.g., reduced sediment yield and enhanced flow regimes) would be realized in the long term.

IMPACTS FROM RECREATION, MOTORIZED VEHICLE TRAVEL, AND ACCESS MANAGEMENT

Alternative A

Leaving 98 percent of the resource area open to unregulated motorized vehicle use would aggravate localized impacts to Colorado River cutthroat trout habitats (e.g. sedimentation from bank damage and slope instability) by providing no control of incompatible vehicle use or the continued proliferation of roads and trails.

Persistent day use and camping activities encouraged by developed access to attractive riverine sites would detract from and likely preclude long-term utility or development of such sites for bald eagle nesting functions.

Alternatives B, C, and D

Implementing road density limitations and CSU stipulations associated with black-footed ferret recovery objectives, would provide the framework (pending development of Recovery/Reintroduction Plan) necessary to reduce the probability of recreation-induced ferret mortality or undue disruption of reproductive activities.

Applying NSO and TL stipulations on riverine parcels would be sufficient to prevent recreation activities from adversely affecting the short-term utility of bald eagle roost and nest functions. Application of CSU stipulations to the White River ACEC (Alternatives C and D) would limit recreation activities as necessary to maintain the long-term utility of cottonwood habitats for use by bald eagle.

Potential road-based influences on species associated with

upland habitats (e.g., northern goshawk) and riparian/aquatic systems (e.g., cutthroat trout, boreal toad) are integral with respective discussions in Impacts from Motorized Vehicle Travel Management on Raptors and Impacts from Recreation Management on Fisheries.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

All Alternatives

Varying acres (by alternative) of Category 2 land available for conditional exchange would consistently offer the potential means for consolidating a land base where more cohesive riparian/aquatic and watershed management can be applied to special status fisheries resources.

IMPACTS FROM FIRE MANAGEMENT

Alternative A

Typical wildfires (small, dispersed events, mainly in the pinyon/juniper and sagebrush/greasewood types) are generally advantageous in maintaining the dispersion and distribution of forage and cover components required by special status species (e.g. northern goshawk in pinyon\juniper, loggerhead shrike in greasewood).

Alternatives B, C, and D

Suppressing fires in woody riparian growth along the White River floodplain would maintain the short-term suitability and extent (65 acres) of cottonwood stands as bald eagle roost and potential nest substrate. Prescribed fire's effects on candidate species would be the same as discussed in Alternative A.

CUMULATIVE IMPACTS ON SPECIAL STATUS WILDLIFE MANAGEMENT

Alternative A

Listed Species

Colorado River fishes: BLM-authorized depletions from the Upper Colorado River Basin (UCRB) would involve 365 acre-feet over the next 5 years (a 0.01 percent increase in basin-wide depletion or about 0.04 percent of remaining natural flow). These depletions contribute to the cumulative deterioration of occupied habitat and require compensation.

Implementing riparian, plant community, and noxious weed objectives would maintain or improve to proper functioning condition constituent elements of the White River's 100-year floodplain--representing about 8 percent of the river's designated critical habitat in Colorado and Utah. Special stipulations would minimize short-term adverse modifications and prevent long-term deteriorating trends in essential floodplain features. Improving herbaceous composition, density, and ground cover would promote subtle long-term improvement of watershed function and contribute to enhanced fishery condition (e.g. enhanced flow regimes and water quality).

Black-footed ferret: Minimizing the disruption and/or involvement of potential ferret habitat through Conditions of Approval or special stipulations would maintain habitat extent and suitability at current levels of oil and gas and coal development. Requiring surveys would minimize the potential for inadvertent ferret mortality.

Improving the quality and persistence of herbaceous forage on early-seral saltbush, greasewood and sagebrush ranges would enhance the long-term availability of prairie dogs as prey on up to 8 percent of potential ferret habitat.

Bald eagle: Implementing NSO stipulations and riparian, plant community, and noxious weed objectives would maintain the utility and availability of about 6 percent of the White River's cottonwood-based habitats in the short term. Applying TL stipulations to BLM-authorized actions would protect reproductive efforts and nocturnal roost activities from disruption and promote selection of alternate sites as established roost/nest conditions deteriorate.

Candidate Species

Colorado River cutthroat trout: Removing timber/woodland on up to 7 percent of watersheds within the Douglas/Cathedral GRA would result in short-term increases in sediment yield, bank erosion and width:depth ratios, but long-term benefits would be realized in decreased sediment delivery and enhanced base flows. Implementing extensive headwater manipulations (15 percent of occupied watershed extent, with localized involvement approaching 33 percent in the headwater tributaries of E. Douglas Creek) involving steep-slope spruce-fir types, could induce severe downstream channel adjustments deleterious to fisheries

conditions through and beyond plan life.

Applying NSO stipulations would deter physical disruption on 50 percent of cutthroat habitats within Soldier and Lake Creeks. Applying Conditions of Approval would minimize short-term disruption on the remaining fisheries and maintain improving trends at low development intensity. There remains no effective means for controlling incompatible vehicular use or road proliferation. Implementing riparian and noxious weed management objectives would promote bank/channel stability and floodplain function preliminary to the development of optimal fisheries condition. Watershed improvement objectives would contribute to small long-term increases in base flow and reduced sediment yield.

Ferruginous hawk: Applying NSO and TL stipulations would protect annual reproductive efforts and maintain long-term availability of suitable nest-substrate.

Although unlikely, full-scale surface coal mining in the Rangely area would severely alter habitat suitability on up to 10 percent of occupied range in the short term. Reclamation, mitigation and the reestablishment of suitable habitat would minimize long-term population effects.

Implementing objectives that improve herbaceous understory elements and open high density brush canopies would enhance the availability of vertebrate prey across up to 32 percent of occupied breeding ranges.

Northern goshawk: Applying NSO and TL stipulations would protect reproductive efforts in the short term, but would be incapable of maintaining the character and long-term integrity of known and potential nest habitats.

Woodland manipulations would reduce the long-term availability of suitable nest and winter foraging habitat. The capacity of pinyon/juniper woodlands and spruce-fir forests to sustain nesting and winter foraging activities for raptors and prey species associated with mature communities would decline in the long term by 35 and 50 percent, respectively.

Implementing watershed management objectives would enhance herbaceous and woody expression beneath or among tree canopies. These effects could increase the diversity and availability of vertebrate prey on up to 40 percent of mature pinyon/juniper habitats.

Loggerhead shrike: Manipulating greasewood and sagebrush communities for enhancement of livestock/big game forage, plant community composition and ferret habitat compensation would involve less than 5 percent of suitable shrike nesting habitat. Applying special stipulations or Conditions of Approval would minimize adverse alteration of breeding habitat sufficient to prevent short-term reductions in overall habitat capacity. Improving early-seral plant community conditions would expand the extent or capacity of suitable habitat by up to 11 percent in the long term.

Mountain sharp-tailed grouse: BLM programs, although generally compatible with long-term maintenance of sharp-tailed grouse habitats (with exception of long-term surface coal mining potential), would be ineffective in influencing grouse populations and recovery.

Alternative B

Listed Species

Colorado River fishes: Depletion and riparian impacts associated with BLM-authorized actions would be the same as Alternative A except that, in the event of unavoidable involvement, special stipulations or Conditions of Approval would require that long term floodplain and channel functions be maintained or restored.

Improving herbaceous understory characteristics would promote long-term improvement of watershed function across 50-60 percent of uplands, including 70 percent of current riparian acreage, and contribute incrementally to the enhancement of downstream conditions for special status and native non-game fisheries.

Black-footed ferret: Applying CSU stipulations and road density limitations within recovery areas (encompassing 50 percent of potentially available ferret habitat) would maintain site suitability and capacity for ferret reintroduction and institute formative prescriptions necessary to reduce direct mortality and disruption of reproductive activities. Minimizing disruption of prairie dog habitats outside recovery areas would foster, but not assure, maintenance of dispersal corridors to suitable habitats in Utah and alternate colonization sites.

Improving the quality and persistence of herbaceous forage on low elevation shrublands through surface water, soils and plant community objectives would promote stability and enhance the long-term availability of prairie dog prey on 52 percent of the ferret recovery areas and across 40 percent of all occupied prairie dog range. Prescribed improvements would be capable of increasing the suitable extent of ferret habitat by 13 percent in the long term.

Bald eagle: Applying NSO and TL stipulations on bald eagle roost and nest sites would provide relatively risk-free protection of nest and roost activities from incompatible BLM-authorized actions and would effectively maintain the utility of 6 percent of the White River's cottonwood-based habitats. Encouraging river-based recreational use of the lower White River could preempt subsequent nest utility on up to 50 percent of BLM's cottonwood habitats.

Maintaining or restoring proper floodplain function as a high priority riparian system and minimizing influences that retard or suppress cottonwood regeneration would promote conditions conducive to the development of riverine cottonwood communities and the sustained availability of suitable nest and roost substrate on 6 percent of the White River. It is estimated that these provisions would be capable of increasing the extent of cottonwood habitat on BLM floodplain parcels by 50 percent in the long term.

Candidate Species

Colorado River cutthroat trout: Modifying livestock management, fencing, planting, and managing beaver would elevate channel and floodplain conditions on 96 percent of cutthroat fisheries to good condition through plan life and would contribute to small long-term increases in base flow and reduced sediment yield.

The overall extent and influence of brush, woodland and timber manipulations within occupied watersheds would be similar to those discussed in Alternative A, but long-term manipulation levels in contributing tributaries would not be expected to disrupt channel and floodplain stability in occupied reaches.

Implementing riparian and cutthroat trout objectives through Conditions of Approval and special stipulations would be adequate to minimize short-term physical disruption and maintain improving trends on cutthroat fisheries.

Ferruginous hawk: Applying TL stipulations would protect nesting efforts from incompatible land uses and allow successful dispersal of young, while NSO stipulations and nest habitat provisions would ensure long-term availability of nest substrate and maintain nest habitat integrity within 0.5 mile of established nests.

Surface coal mining in the Rangely area would have the same potential effects on ferruginous hawk habitats as Alterative A.

Maintaining habitat capacity within ferret recovery areas would maintain important prey base elements across 28 percent of total breeding habitat hosting 50 percent of known breeding territories. Enhancing the density and production of perennial herbaceous cover and opening high density brush canopies would promote long-term vertebrate prey population stability and availability on 40 percent of breeding ranges.

Applying road-density limitations on ferret recovery areas would stabilize or slightly reduce the potential effects of recreational activities on up to 50 percent of known ferruginous hawk nest territories.

Northern goshawk: Manipulating woodlands would reduce the long-term availability of suitable nest and winter foraging habitat by an estimated 4-5 percent in the short term. Long-term reductions in breeding and foraging habitat capacity would approach 35-40 percent in pinyon/juniper habitats and 2 percent in spruce-fir and aspen habitats. Implementing objectives to moderate grazing intensity would enhance herbaceous and woody expression beneath or among tree canopies. These effects would increase the structural complexity of woodland habitats and the diversity and availability of vertebrate prey on up to 40 percent of mature pinyon/juniper habitats.

Implementing big game cover retention guidelines would reserve 40 percent of woodland cover within project locales (1 mile radii) in contiguous blocks of up to 800 acres.

Applying NSO and TL stipulations would fully protect reproductive efforts and the short-term utility of nest territories. Applying nest habitat provisions would maintain the integrity of known territories for extended periods of time, but would not prevent declines in long-term habitat availability or development.

Limiting road densities in select habitats would stabilize or slightly reduce disruption of nesting activities or disuse of suitable habitat on up to 20 percent of pinyon/juniper habitats and 80-90 percent of aspen/spruce-fir types.

Loggerhead shrike: Impacts would be the same as described for Alternative A, except that improvements to early-and mid-seral plant communities and fragile watersheds would enhance prey abundance and availability on up to 82 percent of occupied habitat and expand the extent of suitable habitat by 11 percent in the long term.

Mountain sharp-tailed grouse: Impacts would be the same as described for Alternative A.

Alternatives C and D

Listed Species

Colorado River fishes: Depletion impacts associated with BLM-authorized actions would be the same as Alternative A.

Designating and managing the White River ACEC would focus and integrate all land uses toward sustained development, improvement, and maintenance of riverine floodplain associations and processes. Implementing riparian, plant community, bald eagle and noxious weed objectives would maintain or improve to proper functioning condition bank, channel and floodplain conditions and processes 8 percent of the White River's designated critical habitat in Colorado and Utah. Lease and special stipulations applied to surface use would prevent activities from impairing floodplain function or riparian expression.

Improving herbaceous understory characteristics would promote long-term improvement of tributary watershed function at levels comparable to Alternative B, and contribute incrementally to improved flow regimes, water quality, and diversification of in-stream channel structure for special status and native non-game fisheries.

Black-footed ferret: Management of ferret recovery areas would be similar to that in Alternative B, but emphasis would shift to enhancing, rather than maintaining the capability of these areas for ferret establishment. Disallowing land uses that adversely modify the extent or distribution of prairie dog colonies outside the recovery areas would assure maintenance of dispersal corridors to prairie dog complexes in Utah and intervening habitat for colonization.

Improving the quality and persistence of herbaceous forage on low elevation shrublands would promote stability and enhance the long-term availability of prairie dog prey on up to 52 percent of the ferret recovery areas and 40 percent of all occupied prairie dog range. Prescribed improvements, including vegetation manipulations, would be capable of increasing the suitable extent of ferret habitat by 13 percent in the long term.

Bald eagle: Applying NSO and TL stipulations on bald eagle roost and nest sites would provide protection of nest and roost activities and maintain the utility of 6 percent of the White River's cottonwood-based habitats at the same level as Alternative B.

Maintaining or restoring proper floodplain function along the White River, as a high priority riparian system, and disallowing land use influences that retard or suppress cottonwood regeneration would sustain floodplain processes and conditions required for the development of riverine cottonwood communities and expansion of suitable nest and roost substrate on 6 percent of the White River. It is likely that these provisions would increase the extent of cottonwood habitat on BLM floodplain parcels by 50 percent in the long term.

Candidate Species

Colorado River cutthroat trout: Applying a CSU stipulation within the East Douglas Creek ACEC would limit incompatible short-term watershed disturbance such that the long-term integrity and development potential of these systems would not be impaired. Conditioning land use within the ACEC to complement or remain compatible with fisheries recovery objectives would ensure that gains in habitat quality are additive and accelerated improvement is realized. All other aspects would be similar to Alternative B.

Ferruginous hawk: Applying TL and NSO stipulations on ongoing nesting activities, enhancing the capacity of ferret recovery areas, and improving plant community and watershed conditions would influence ferruginous hawk in the same manner and levels described in Alternative B.

Preventing, rather than minimizing, adverse alteration of prairie dog populations and distribution outside recovery areas would complement prey base maintenance across all breeding habitat. Expanding road density limitations would stabilize or slightly reduce the potential effects of recreational activities on up to 70 percent of available ferruginous hawk nest habitat.

Northern goshawk: Woodland manipulations would reduce the short-term availability of suitable nest and winter foraging habitat by an estimated 4 percent, and up to 8 percent through rotation. No declines in the capacity of aspen and spruce-fir habitats are expected. Dispersing woodland manipulations to enhance big game habitat utility in Alternative C would tend to aggravate fragmentation of habitats required by such specialized woodland raptors in project locales. Implementing big game cover retention guidelines would reserve 40 percent of woodland cover within project locales (1 mile radii) in contiguous blocks of up to 500 acres. In Alternative D, dispersal of woodland manipulations would affect goshawk habitat as in Alternative

B.

Applying NSO and TL stipulations would fully protect reproductive efforts and the short-term utility of nest territories. Applying nest habitat provisions and improved nest detection gained through required inventory would maintain the integrity of established territories for extended periods of time.

Limiting road densities in select habitats would stabilize or slightly reduce disruption of nesting activities or disuse of suitable habitat on up to 80 percent of pinyon/juniper habitats and 46 percent of aspen/spruce-fir types.

Implementing various livestock, wildlife, plant community, and watershed management objectives that moderate grazing intensity would enhance herbaceous and woody expression beneath or among tree canopies, increase the structural complexity of woodland habitats and, ultimately, increase the diversity and availability of vertebrate prey on up to 40 percent of mature pinyon/juniper habitats.

Loggerhead shrike: Impacts would be the same as described for Alternative B.

Mountain sharp-tailed grouse: Impacts would be the same as described for Alternative A.

IMPACTS ON WILDERNESS MANAGEMENT

IMPACTS FROM WILDERNESS MANAGEMENT AND OTHER PROGRAMS

All Alternatives

Impacts of designating or not designating the six wilderness study areas (WSAs) in the White River Resource Area are described in the 1990 Craig District *Final Wilderness Environmental Impact Statement* (EIS). As stated in the wilderness EIS, Designating Bull Canyon, Willow Creek, and Skull Creek WSAs was wilderness would preserve their solitude, primitive and unconfined recreation, high scenic quality, and naturalness. Nondesignation of these WSAs would result in the wilderness characteristics of solitude and naturalness on about 8,000 acres of the WSA through the combined effects of management.

Also as stated in the wilderness EIS, nondesignation of Black Mountain WSA would result in the loss of solitude and naturalness. Nondesignation of Windy Gulch WSA would result in the loss of solitude and naturalness, mostly because of proposed range improvement projects. Nondesignation of Windy Gulch WSA would result in the loss of solitude and naturalness, mostly because of proposed range improvement projects and off-road vehicle travel.

IMPACTS ON WILD AND SCENIC RIVERS MANAGEMENT

IMPACTS FROM WILD AND SCENIC RIVER MANAGEMENT

All Alternatives

Not recommending as suitable for designation those streams found eligible for consideration would result in the BLM not managing the eligible stream for the protection of their wild and scenic river characteristics following publication of the RMP record of decision.

The free flowing and outstandingly remarkable features that resulted in river and stream segments being eligible for wild and scenic river study would continue only until the record of decision is signed.

IMPACTS FROM SOILS AND SURFACE WATER MANAGEMENT

Alternative A

Preparing individual watershed activity plans and applying best management practices when implementing land use activities would maintain soil structure and minimize adverse impacts to outstandingly remarkable riparian features. Continuing to stipulate no surface occupancy (NSO) in the Lake and Soldier Creek drainages would provide protection for steep slopes and fragile soils with slumping potential on approximately 7,200 acres. Controlled surface use stipulations would be implemented on approximately 16,490 acres to protect fragile soils on slopes exceeding 35 percent. These stipulations would minimize sedimentation which would adversely affect Colorado River cutthroat trout habitat on approximately 12 miles of eligible stream segments on Lake and Soldier Creeks.

Alternative B

Not providing stipulations to protect potential landslide areas and fragile soils would impact approximately 12 miles of Colorado River cutthroat trout habitat in East Douglas, Lake, and Soldier Creeks by allowing excessive sedimentation and potential surface movement. Impacts on trout populations could be severe, with the potential to eliminate populations from the East Douglas Creek tributaries, and long-term implications would be likely.

Alternative C

Designating NSO on 49,140 acres of fragile soils in the East Douglas Creek tributaries would prevent surface occupancy in areas delineated from SCS Order III soil surveys and prevent excessive sedimentation of eligible stream segments and adverse impacts on Colorado River cutthroat trout habitat.

Including watershed treatments in integrated activity plans would provide added protection for cold water fisheries from sedimentation and potential surface movement.

Alternative D

Implementing controlled surface use stipulations to protect fragile soils on slopes exceeding 35 percent (on approximately 23,550 acres) in the East Douglas Creek tributaries would protect outstandingly remarkable features by reducing sedimentation and adverse affects on water quality which would threaten the existence of Colorado River cutthroat trout.

Including watershed treatments in integrated activity plans would benefit outstandingly remarkable features by implementing an ecosystem approach to resource maintenance and protection.

IMPACTS FROM WATER RIGHTS MANAGEMENT

All Alternatives

Continuing to acquire water rights, in support of BLM programs, would have a beneficial effect on the outstandingly remarkable features of eligible stream segments because increased water rights would result in greater influence on management activities within the river corridor.

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Continuing to develop oil and gas in eligible stream drainages at the reasonable foreseeable level could adversely affect Colorado River cutthroat trout habitat in the East Douglas Creek tributaries by increasing erosion, reducing soil infiltration and altering vegetation. Oil and gas exploration and development would be subjected to NSO stipulations for protection of trout habitat, beaver ponds and soils with slumping potential.

IMPACTS FROM MINERAL MATERIALS MANAGEMENT

Alternatives A and B

Continuing to prohibit mineral material disposal on approximately 3,100 acres of BLM land below Taylor Draw Dam, if it had the potential to adversely affect critical bald eagle habitat within cottonwood galleries, would protect outstandingly remarkable river features.

Alternatives C and D

No impacts

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Continuing to prescribe treatments that protect or rehabilitate riparian areas, in conjunction with other resource activities, would provide beneficial effects to outstandingly remarkable river features in the East Douglas/Cathedral Creek tributaries.

Alternative B

Implementing activity plans on 50 acres of high-priority riparian habitats, in the East Douglas Creek tributaries, would provide positive impacts for outstandingly remarkable cold water fisheries. In areas of declining riparian habitat, the trend would be reversed within 10 years and the riparian zone would be functional within 20 years. In stream corridors which are improving or contain a functioning riparian system, management would enhance the improvement or ensure the maintenance of the system.

Alternatives C and D

Implementing activity plans on high-priority riparian habitats would provide positive impacts for outstandingly remarkable cold water fisheries.

In areas of declining riparian habitat, the trend would be reversed within 10 years and the riparian zone would be functional within 20 years. In stream corridors which are improving or contain a functioning riparian system, management would enhance the improvement or ensure the maintenance of the system.

IMPACTS FROM SPECIAL STATUS PLANTS MANAGEMENT

Alternative A

Continuing to require on-the-ground surveys in known habitats for special status plants would protect these sites in the upper reaches of Lake Creek and Soldier Creek (an outstandingly remarkable feature) by mapping identified areas and establishing NSO within mapped locations.

Alternative B

Extending requirements for on-the-ground surveys, mapping, and avoidance of special status plants to include potential habitat would provide increased protection for these outstandingly remarkable features in Lake and Soldier Creeks.

Designating controlled surface use in the proposed Soldier Creek ACEC (2,150 acres) would protect sensitive plants and remnant vegetation associations (RVAs) within this ACEC by requiring an on-the-ground survey and mapping of identified occurrences to be conducted prior to approving surface-disturbing activity. The entire ACEC would be designated as CSU while existing and future mapped habitats would be designated NSO.

Alternatives C and D

Designating East Douglas Creek (including eligible segments of Cathedral, Lake, Soldier, and Bear Park Creeks) as an ACEC to protect outstandingly remarkable sensitive plants and remnant plant associations would provide positive and protective long-term impacts for plant communities found within the stream corridors.

IMPACTS FROM LIVESTOCK GRAZING MANAGEMENT

Alternative A

Continuing to modify AMPs and Section 15 leases by reestablishing riparian vegetation, installing in-stream structures, fencing, and managing beaver habitat would result in positive impacts to outstandingly remarkable fisheries and stream values by maintaining desirable vegetation, reducing erosion and protecting streambanks.

Alternatives B, C, and D

No impacts

IMPACTS FROM NON-T/E RAPTORS MANAGEMENT

Alternative A

Stipulating NSO on approximately 400 acres in the East Douglas Creek tributaries (primarily East Douglas Creek) and providing 300-foot buffers around active beaver colonies would protect important riparian vegetation and help maintain desirable habitat for Colorado River cutthroat trout in East Douglas, Lake, and Soldier Creeks.

Alternatives B, C, and D

No impacts

IMPACTS FROM FISHERIES MANAGEMENT

Alternative A

Continuing to modify grazing strategies in AMPs and Section 15 leases, in conjunction with livestock grazing objectives, would protect outstandingly remarkable fisheries by reestablishing riparian vegetation, installing in-stream structures, fencing, and protecting beaver colonies.

Alternatives B, C, and D

Pursuing the acquisition of aquatic habitat, with priority given to known and potential Colorado River cutthroat trout fisheries, would benefit outstandingly remarkable fisheries in the East Douglas Creek tributaries.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

Alternative A

Implementing NSO stipulations on approximately 4,560 acres of valley floor and slopes exceeding 30 percent in the Lake and Soldier Creek drainages would protect remnant populations of Colorado River cutthroat trout by limiting development to stable sites, minimizing soil delivery to streams, reducing sedimentation, and improving water quality.

Continuing to implement timing limitations on 3,200 acres of mature cottonwood galleries along the lower White River would protect bald eagle winter perch and roost substrate from disturbance by deferring development within 1/4-mile of the river's margin from November 15 to April 15.

Alternative B

Designating NSO on approximately 3,200 acres of bald eagle nocturnal roosts and/or concentration areas in White River Segments B and C would prohibit surface disturbance within 1/4 mile of the designated feature. A timing limitation would prohibit development within 1/2 mile of bald eagle nests from December 15 to June 15 on 3,200 acres of White River Segments B and C. This stipulation and timing limitation would protect cottonwood galleries that provide critical winter habitat for bald eagle recovery and prevent disturbance of eagles during winter roosting.

Alternatives C and D

Designating controlled surface use on 47,610 acres of East Douglas ACEC would protect existing conditions of and gains made in improving Colorado River Cutthroat trout fisheries by requiring developers to submit a plan of development to the area manager which ensures that development would cause no increase in water temperature and no decrease in vegetation-derived stream shading or decrease in water quality. This stipulation would represent a significant increase in protection for Colorado River cutthroat trout over the NSO stipulation, on slopes exceeding 30 percent, designated under Alternative A, because it ensures the protection of water quality critical in sustaining cutthroat trout populations.

Designating NSO which prohibits surface disturbances within 1/4 mile of approximately 3,200 acres of bald eagle nocturnal roosts and/or concentration areas in White River Segments B and C would minimize disturbance to bald eagles, causing winter populations to remain stable. A timing limitation would prohibit development within 1/2 mile of bald eagle nests from December 15 to June 15 on 3,200 acres of White River Segments B and C.

Colorado squawfish habitat in the lower White River would be afforded the same protection as described under Alternative A.

IMPACTS FROM RECREATION MANAGEMENT

Alternatives A and B

No impacts

Alternative C

Designating Rangely SRMA (410,830 acres) for the structured recreation opportunities that include river boating, fishing, environmental education, and scientific study would benefit outstandingly remarkable river-related values by providing emphasis on the protection of these features.

Alternative D

Managing the White River ACEC to provide specific recreation opportunities would benefit outstandingly remarkable river-related values by emphasizing their importance in maintaining or improving recreation settings.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

Alternative A

Making 1,174,100 acres of Category 2 land available for exchange for private or state lands could affect the protection of wild and scenic river eligibility criteria. If land acquired in exchange for Category II lands is located within an eligible river or stream corridor, it would represent a positive impact to management decisions by increased jurisdiction. Although unlikely, if Category 2 land were exchanged for land outside the river corridor, BLM influence on river-related activities would be diminished.

Alternative B

Making 949,900 acres of Category 2 land available for exchange for private or state lands could affect wild and scenic river eligibility criteria. If land acquired in exchange for Category II lands are located within an eligible river or stream corridor, it would represent a positive impact to the outstandingly remarkable features, because it would result in greater control of land use activities with the potential to impact outstandingly remarkable features. Very little, if any, Category 2 lands have been identified within river corridors, so the potential for negative impacts is minimal.

Alternatives C and D

No impacts

IMPACTS FROM LAND USE AUTHORIZATIONS MANAGEMENT

Alternatives A, B, and D

Continuing to locate pipelines, roads, and other development within an eligible river corridor could impact the eligibility of stream segments if sensitive plant, trout, or bald eagle populations are affected. Even if eligibility of a stream segment is not affected by development, there could be impacts on future suitability determinations.

Alternative C

Designating 839,730 acres as Category 2 land (334,370 acres less than Alternative A) would have reduced potential to affect wild and scenic river features since land exchange opportunities would also be reduced.

IMPACTS FROM FIRE MANAGEMENT

Alternative A

Disturbing riparian areas by burning or fire suppression activities could result in increased sedimentation or loss of vegetation which would be detrimental to Colorado River cutthroat trout populations in the East Douglas Creek tributaries. The loss of cottonwood galleries would impact winter roosts and concentration areas for bald eagles in Segments B and C of the White River.

Alternatives B, C, and D

Stipulating the suppression of fire in mature cottonwood galleries and bald eagle winter habitat in White River Segments B and C would protect approximately 3,200 acres of outstandingly remarkable features. Establishing a White River Integrated Activity Planning area would have medium development priority and use an ecosystem approach to planning and the protection of outstandingly remarkable river-related values.

CUMULATIVE IMPACTS ON WILD AND SCENIC RIVER MANAGEMENT

All Alternatives

Failure to recommend any river, stream or river/stream segment for designation as a wild and scenic river would not make the study segments more susceptible to land use activities that would impair their eligibility status. Following signature of the record of decision, the free-flowing and outstandingly remarkable values that resulted in river/stream segment eligibility would be protected, only on streams that occur on BLM land (about 22 percent of the stream habitat) by surface stipulations, ACEC designation (varying by alternative), and the Endangered Species Act.

Alternative A

Continuing to designate 12,160 acres of NSO and 16,490 acres of CSU in the East Douglas Creek tributaries would provide some degree of protection for eligibility criteria by minimizing landslides, soil disturbance and damage to Colorado River cutthroat trout populations and habitat.

Alternative B

Designating Soldier Creek as an ACEC (2,150 acres) would provide protection for BLM-sensitive and remnant vegetation communities and limited protection of Colorado River cutthroat trout habitat. Implementing activity plans on 49.7 miles of high-priority riparian habitat, reversing declining habitat trends and producing functional riparian zones within 20 years would benefit cutthroat trout habitat on 32 miles of Lake, Soldier, and Bear Park Creeks. Implementing NSO and timing limitation stipulations for bald eagle roosts and nesting areas on approximately 3,200 acres in White River Segments B and C. Designating 4,890 acres of river corridor as the Lower White River SRMA would target wildlife viewing and nature study, providing emphasis to the protection of outstandingly remarkable river values.

Alternative C

Designating 47,610 acres of East Douglas Creek ACEC, with a controlled surface use stipulation would help to protect water quality in drainages critical to the existence of Colorado River cutthroat trout. ACEC designation on 950 acres of bald eagle and Colorado River squawfish habitat on the White River would support the continued existence of these federally-listed species. Designating NSO stipulations on 49,140 acres of fragile soils in Soldier, Lake, Cathedral, and East Douglas Creeks would also help protect water quality. Implementing activity plans to protect high priority riparian habitats on 49.7 miles of streams in the East Douglas Creek tributaries, maintaining functioning riparian systems and reversing the decline of non-functional systems would enhance cutthroat trout fisheries.

Alternative D

Designating 47,610 acres of East Douglas Creek ACEC, with a controlled surface use stipulation, would protect water quality in drainages critical to the existence of Colorado River cutthroat trout. Designating 950 acres as the White River ACEC would benefit bald eagle and the federally-listed Colorado River squawfish. Implementing activity plans to protect high priority riparian habitats on 49.7 miles of streams in the East Douglas Creek tributaries would maintain functioning riparian systems and reverse the decline of non-functional systems.

IMPACTS ON VISUAL RESOURCES MANAGEMENT

IMPACTS FROM VISUAL RESOURCES MANAGEMENT

Alternative A

Continuing to designate VRM Class II on approximately 460,000 acres, including the 6 WSAs and the viewsheds from Cathedral Bluffs, would provide protection of landscape characteristics while allowing ongoing management actions that fit within the limits of acceptable change. Designating VRM Class III on 403,100 acres, including the main artery road viewsheds, would provide protection against significant changes in landform by management actions. Designating VRM Class IV on 1,415,800 acres would allow development by all interests in the majority of areas where developmental activity is already occurring.

Portions of the six WSAs would be designated VRM Class II, III, and IV, which is not in accordance with BLM policy and regulation. However managing each WSA, as required by interim management policy and guidelines, would protect their suitability for wilderness designation pending congressional legislation.

Alternatives B, C, and D

Reducing 460,000 acres of VRM Class II (Alternative A) by 31,000, 25,940 ACRES, AND 48,450 ACRES under Alternatives B, C, and D, respectively, would provide less protection of natural landscape characteristics. Most of the VRM Class II designation would be in the Blue Mountain/Moosehead, Cathedral Bluffs, Oil Spring Mountain, and Coal Oil Rim areas.

IMPACTS FROM MINERAL DEVELOPMENT, LIVESTOCK GRAZING, AND RECREATION MANAGEMENT

All Alternatives

Prohibiting surface-disturbing activities or conditioning them so that they would exceed levels of acceptable change allowed by the classification would maintain the classifications proposed. Authorizing individually minor surface-disturbing activities in Class II areas could collectively change the VRM classification because they would collectively alter landscapes over time. The same is true for Class III areas. Authorizing large-scale activities such as vegetation manipulations and mining could also change VRM classifications.

No lease and NSO stipulations would prevent surface disturbance and would, thus, protect scenic values in the immediate areas. However, authorizing many surface-disturbing activities outside small NSO areas could collectively change the VRM classification. Except for the black-footed ferret CSU stipulation, CSU and TL stipulations would provide little or no protection since they usually defer or relocate impairment of visual landscapes.

IMPACTS FROM T/E AND SPECIAL STATUS PLANT MANAGEMENT

Alternative A

Continuing to stipulate NSO to protect known T/E and candidate T/E plant habitat (440 acres under Alternative A and 46,840 acres under Alternatives B, C, and D) would provide only natural ecological changes to occur within the protected areas.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Continuing to protect 81,970 acres of Wilderness Study Areas from development, during interim management, would benefit visual resources by maintaining a natural landscape consistent with wilderness objectives. However, following signature of the record of decision for the RMP, only those WSAs designated as wilderness would continue to be protected by wilderness designation.

IMPACTS FROM AREAS OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT

All Alternatives

Continuing to stipulate CSU in designated ACECs would protect the values for which they have been designated but would provide little protection for visual resources in those areas. Requiring an inventory for special status plant habitat prior to approving surface-disturbing activities and stipulating NSO on identified and mapped resources would help preserve natural landscapes.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Continuing to allow unrestricted off-highway motorized vehicle travel throughout the resource area would degrade landscape character, particularly in the Flag Creek and Coal Oil Basin areas on a non-seasonal basis, and in Piceance Basin during hunting season.

Alternative B

Limiting motorized vehicle travel to existing roads and trails would benefit visual resources by ensuring that impacts from motorized vehicles are within the acceptable level of change for VRM classifications.

Alternatives C and D

Restricting motorized vehicle travel to designated roads and trails and closing highly scenic areas would result in a large decrease in degradation caused by off road motorized vehicle use and competitive events.

IMPACTS FROM LAND USE AUTHORIZATIONS MANAGEMENT

Alternative A

Continuing to authorize land-use for facilities on BLM lands that require maximum line-of-sight elevation advantages would create viewshed obtrusions in and from VRM Class II areas. A total of eight existing corridors intersect portions of VRM Class II land. All are occupied and three have been identified for elimination (Kendall Point, Rifle-Meeker, and Flag Creek-Rifle Creek).

Alternatives B, C, and D

Two proposed corridors in the Cathedral Bluffs area--Highway 64-Ryan Gulch and Park Canyon-Magnolia bisect VRM Class II areas. Those two areas have been designated VRM Class III. All other proposed corridors have been located clear of VRM Class I and II land.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

All Alternatives

Acquiring lands designating as Category II would provide the opportunity to acquire scenic private lands that would protect surrounding or adjacent public land from undesirable landscape alterations.

IMPACTS FROM FIRE MANAGEMENT

Alternative A

Not stipulating fire suppression would adversely impact wildlife habitat and would result in short-term alterations in the visual landscape, with the level of change dependent upon the vegetation community burned. Fires in timber and woodland would cause greater adverse effects to a viewshed than fires in sagebrush or grassland.

Alternatives B, C, and D

Stipulating the suppression of fire on approximately 3,200 acres within the lower White River corridor would protect mature cottonwood galleries/bald eagle winter habitat from loss of habitat and maintain natural landscapes. Establishing a White River Integrated Activity Planning area would benefit visual resources by providing increased emphasis on their protection.

CUMULATIVE IMPACTS ON VISUAL RESOURCES MANAGEMENT

All Alternatives

Table 4-13 shows the acres of existing VRM classification under Alternative A and the number of acres of increase or decrease under Alternatives B, C, and D.

Table 4-13. Changes in VRM Classification

VRM Class	Existing Classification (Alt. A)	Change (Alt. B)	Change (Alts. C/D)
I	0	+41,250	+41,250
II	460,700	-31,700	-48,450
III	403,100	+11,350	+458,580
IV	1,415,800	-12,480	-1,269,700

The most significant departure from Alternative A occurs under Alternatives C and D in VRM Class IV, and the significant reduction in those acres provides a much higher degree of visual resource protection from landscape alteration. NSO on 37,570 acres of wildlife habitat would provide a limited degree of visual landscape benefit, depending upon the location and extent of surface protection.

WSA designation would protect WSAs for the short term during wilderness interim management. The visual resources on those WSAs designated wilderness would receive long-term protection, but those not designated as wilderness would be reclassified as VRM Class II or III. Black Mountain and Windy Gulch WSAs would be reclassified as Class II and would be subject to landscape alternations, thus the scenic qualities of these nondesignated

WSAs could be degraded.

The amount of protection afforded by no lease and NSO stipulations varies by alternative (see Table 4-1, Impacts on Soils Section). Most CSU and TL stipulations would do little to protect alterations in landscape and scenery.

Alternative A

Approximately 460,000 acres of VRM Class II includes 46,540 acres within the six WSAs and the viewsheds from Cathedral Bluffs, providing protection for visual resources while allowing for ongoing management actions that fit within the limits of acceptable change.

Continuing to designate VRM Class IV on the remaining 34,650 acres of the WSAs (Bull Canyon/Willow Creek/Skull Creek/Black Mountain) would not be consistent with BLM policy and regulations that require WSAs to be managed under VRM Class I objectives. All WSAs, regardless of present VRM classification, would be re-designated VRM Class I following wilderness designation.

Alternative B

Impacts would be the same as those described under All Alternatives and Alternative A except: WSAs would be managed as VRM Class I during interim management and following designation as wilderness.

The 94,120 acres of NSO around raptor nests, sage grouse leks, T&E and sensitive plants/RVA would help protect the visual landscape in designated areas by prohibiting surface disturbance.

Alternatives C and D

Impacts would be the same as those described under All Alternatives and Alternative A except: WSAs would be managed as VRM Class I instead of other classes to comply with BLM policy and regulation, and restricting motorized vehicles to travel designated roads and trails would help protect scenic values.

IMPACTS ON RECREATION MANAGEMENT

IMPACTS FROM RECREATION MANAGEMENT

Alternative A

Continuing to manage 21,000 acres as a special recreation management area (SRMA) in Piceance Basin would enhance hunting and camping activities and provide structured recreation opportunities. Managing the remainder of the resource area as an extensive recreation management area (ERMA) would provide unstructured recreation opportunities.

Alternative B

Designating 4,890 acres of the lower White River and Kenney Reservoir as an SRMA would enhance floatboating, picnicking, wildlife viewing, and camping activities and provide structured recreation opportunities. Managing the remainder of the resource area as an ERMA would provide unstructured recreation opportunities.

Alternative C

Designating Black Mountain/Windy Gulch (26,470 acres) as an SRMA would provide structured recreation opportunities for hunting, horseback riding, hiking, backpacking, wildlife viewing, and nature study.

Designating Rangely (410,800 acres) as an SRMA would provide structured recreation opportunities for mountain biking, river boating, fishing, camping, picnicking, cultural resource education/interpretation, environmental education, and scientific study. Managing the remainder of the resource area as a ERMA would provide unstructured hunting, sightseeing and general recreational use.

Alternative D

Designating the Blue Mountain GRA and the White River ACEC for specific recreation activity opportunities and

physical, social, and managerial settings for targeted recreation experiences would benefit the Bull Canyon, Willow Creek and Skull Creek WSAs by providing adjacent recreation opportunities that complement wilderness designation and would help protect wild and scenic river eligibility criteria on the lower White River.

IMPACTS FROM SOILS MANAGEMENT

Alternative A

Protecting soil resources on 7,200 acres of NSO and 16,490 acres of CSU stipulations for landslide and soil management priority areas, would restrict or limit access.

Alternatives B and D

No impacts

Alternative C

Protecting 850,000 acres with NSO stipulations and 52,000 acres with CSU stipulations to protect fragile soils and improve watersheds, would restrict or limit access.

IMPACTS FROM SURFACE WATER MANAGEMENT

Alternative A

Continuing to improve fragile watersheds on 80,910 acres would maintain or improve water quality, reduce sedimentation and salinity, and protect channel stability, thereby preserving a desirable recreation setting.

Alternatives B and D

No impacts

Alternative C

Increasing water quality and improving fragile streams on approximately 688,507 acres would provide greater opportunities for quality recreational activities with improved quality and quantity of water.

IMPACTS FROM GROUNDWATER MANAGEMENT

All Alternatives

Maintaining or enhancing aquifers for processing water that is potable and useable would be a benefit to recreational activities on public lands by providing water that is safe for consumption.

IMPACTS FROM OIL AND GAS MANAGEMENT

All Alternatives

Continuing to increase the number and extent of roads and trails as a result of oil and gas development would improve access and recreation opportunities.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Continuing to stabilize streambanks, optimize animal distribution, and fence riparian habitat would provide long-term benefits to recreation on high- and medium-priority riparian areas. Riparian areas offer very important recreation opportunities, and improving values such as fisheries and waterfowl habitat would allow for increased use of BLM lands.

Alternatives B, C, and D

Improving both high- and medium-priority riparian areas would allow for a quicker recovery of the riparian systems, thus providing fisheries and other aquatic habitat that would create a water-associated recreational experience.

IMPACTS FROM SPECIAL STATUS PLANTS AND ACEC MANAGEMENT

Alternative A

Stipulating NSO on 1,440 acres of known T/E plant habitat would prohibit motorized vehicle travel, primarily in the

Raven Ridge area. NSO stipulations would protect sensitive plants and remnant vegetation associations on 4,518 acres, prohibiting motorized vehicle travel and limiting recreation opportunity. Recreational benefit would be derived by those who wish to observe these species in their natural habitat.

Alternative B

Increasing ACEC area by 9,200 acres would decrease off-road activity and cross-county vehicle travel but would protect plant communities for viewing and study.

Alternatives C and D

Providing increased protection for special status plants would provide greater recreational opportunities and settings for those users interested in observing those species. NSO stipulations on 46,836 acres of known and potential T/E plant habitat would restrict motorized vehicle travel within identified areas.

IMPACTS FROM TIMBER AND WOODLANDS MANAGEMENT

Alternatives A and B

Continuing to provide opportunity for personal-use harvesting of forest products would benefit individuals wishing to gain a recreation experience in that manner, while failure to provide for personal-use harvesting would deprive those individuals of an outdoors, family-oriented, and wholesome activity.

Alternative C

No impacts

Alternative D

Continuing sawtimber and woodland harvest would degrade most recreational settings where activities occur. Some recreational benefit could be derived from the personal-use cutting of aspen, fuelwood, posts and poles, and Christmas trees.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternatives A and D

Restricting wild horses to Piceance/East Douglas Herd Management Area (HMA) and the loss of opportunity to observe horses on 433,210 acres would increase motorized vehicle travel pressures on the remaining 164,732 acres.

Alternative B

Reducing wild horse habitat by 18,000 acres would decrease recreational opportunities to view wild horses, but concentrating horses into a smaller area would increase the opportunity to view horses in that setting.

Alternative C

Increasing wild horse numbers would provide a greater opportunity for viewing and a larger area for chance sightings of horses.

IMPACTS FROM BIG GAME MANAGEMENT

Alternative A

Continuing to apply 5,010 acres of NSO and 532,220 acres of TL stipulations would enhance big game habitat and could improve recreational hunting and wildlife viewing opportunities.

Alternative B

Providing 568,670 acres of TL stipulations on big game habitat would improve big game habitat and populations and could enhance big game viewing and hunting, which is the primary recreational activity in the resource area.

Alternatives C and D

Applying TL stipulations to 968,210 acres of big game ranges would improve critical big game habitat and management of habitat to create greater varieties of wildlife and could improve opportunities for hunting, photographing, viewing, and any recreational activity that is enhanced by the presence of big game.

IMPACTS FROM NON-T/E SPECIES MANAGEMENT

Alternative A

Continuing to stipulate NSO within 300 feet of active beaver colonies would protect approximately 416 acres from development activity and could benefit recreation by improving wildlife viewing and could improve fishing opportunities.

Alternative B

Stipulating NSO on 20,905 acres around raptor nests, providing protection within 1/8-mile of nests, and designating TL stipulations buffers on 72,680 acres around nesting areas from February 1 to August 15 could improve wildlife viewing opportunities.

Alternatives C and D

NSO stipulations designed to protect wildlife species and habitat could also prevent surface disturbance and provide improved viewing, photographing, and hunting opportunities. Not protecting 416 acres around beaver colonies with an NSO stipulation would result in a slight impact to beavers although colony dynamics could offset the lack of stipulations. Approximately 20,905 acres of NSO stipulations would provide 1/8-mile buffer around non T/E raptor nests and protect raptors during reproduction.

IMPACTS FROM GROUSE MANAGEMENT

Alternative A

Stipulating 327 acres of NSO and designating TL stipulations on 6,959 acres to protect sage grouse strutting grounds could increase opportunities to view and hunt, thus providing a quality recreational experience. Watchable wildlife opportunities would increase as improvements are made.

Alternative B

Stipulating NSO on 5,487 acres of sage grouse leks (10- to 40-acre NSO parcel per lek and NSO within 1/4-mile of identified lek sites) could increase opportunities to view and hunt these species.

Alternative C

Designating NSO and TL stipulations on 5,487 acres within 1/4-mile of identified sage grouse leks could improve sage grouse viewing, photographing, or hunting in the affected areas.

Alternative D

Designating 5,487 acres of NSO within 1/4-mile of identified sage grouse leks could enhance grouse populations and improve hunting and wildlife viewing.

IMPACTS FROM SPECIAL STATUS WILDLIFE MANAGEMENT

Alternative A

Designating 9,430 acres of NSO and 52,680 acres of TL stipulations to protect special status wildlife habitat could increase opportunities to view these species, thus providing a quality recreational experience.

Alternative B

Designating CSU stipulations on approximately 53,827 acres of black-footed ferret reintroduction area would require an operating plan to ensure the protection of black-footed ferrets and could provide increased opportunity to view special status wildlife. Stipulating NSO and TL stipulations to protect bald eagle habitat could enhance bald eagle viewing and photography.

Alternatives C and D

Stipulating 11,170 acres of NSO and 128,380 acres of CSU to protect special status wildlife species and habitat could also provide increased opportunity to encounter, view, and photograph these species.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Continuing to manage 41,250 acres of recommended WSAs and 40,938 acres of non-recommended WSAs to protect

wilderness values during interim management would provide outstanding primitive, solitude, and unconfined recreation opportunities.

IMPACTS FROM WILD AND SCENIC RIVERS MANAGEMENT

All Alternatives

Continuing to protect the outstandingly remarkable river-related features which made river and stream segments eligible for wild and scenic river study would also protect recreation values associated with fisheries and unique vegetation communities.

IMPACTS FROM VISUAL RESOURCES MANAGEMENT

Alternative A

Designating the following acres of visual resource management classes would impact recreation opportunities by the level of acceptable change permitted. VRM Class II would provide the most protection for visual landscapes, while VRM Class IV would allow the greatest level of change to natural landscapes:

0 acres of VRM Class I
460,700 acres of VRM Class II
403,100 acres of VRM Class III
1,415,800 acres of VRM Class IV

Alternative B

Reducing VRM Class II acreage by 31,000 (from Alternative A) would provide less protection of natural landscape characteristics and negatively impact recreation in those areas.

Designating VRM Class IV on Yanks Gulch/Upper Greasewood and Raven Ridge would provide the potential for recreation degradation resulting from development activities. The result, without protective management, would be a loss of a potential recreation area with 4,770 ACEC acres.

Alternative C

Designating 41,250 acres of VRM Class I (an increase of 41,250 acres from Alternative A) and 434,760 acres of VRM Class II (a decrease of 25,940 acres from Alternative A) would improve recreation opportunity by allowing minimal changes to the natural landscape.

Alternative D

Designating 41,250 acres of VRM Class I (an increase of 41,250 acres from Alternative A) and 412,250 acres of VRM Class II (a decrease of 48,450 acres from Alternative A) would improve recreation opportunity by allowing minimal changes to the natural landscape.

IMPACTS FROM AREAS OF CRITICAL ENVIRONMENTAL CONCERN MANAGEMENT

All Alternatives

Designating 8,740 acres, 17,640 acres, 122,000 acres, and 99,120 acres of ACECs, under Alternatives A, B, C, and D respectively would provide opportunities to protect plant communities and result in recreational settings that include naturalness and solitude. Conversely, motorized vehicle use would be restricted within identified special status plant habitat.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Continuing to close a portion of Moosehead Mountain (6,260 acres), the WSAs (82,188 acres), and soil management priority areas (16,490 acres) to motorized vehicle travel would impact those who use this as a recreation opportunity, while closure areas would provide a wilderness/solitude recreational experience for others.

Alternative B

Restricting motorized vehicle travel to existing roads and trails and closing Moosehead Mountain and Oak Ridge State Wildlife Area, along with seasonal closures, would decrease the available travel area.

Alternatives C and D

Restricting motorized vehicular travel to designated roads and trails would eliminate off-road use and opportunities for cross-county travel. Roads not designated by sign or area would be eliminated from the travel plan, and compliance measures would need to be established.

IMPACTS FROM CULTURAL AND PALEONTOLOGICAL RESOURCES MANAGEMENT

All Alternatives

Revising the boundary of Canyon Pintado National Historic District (16,036 acres) to conform with standard legal descriptions, preserving cultural and paleontological features (rock art, fossils), developing facilities to prevent damage to cultural and paleontological resources, and requiring inventory of Class I paleontological formations would enhance recreational opportunities in the Rangely area.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

Alternatives A and B

No impacts

Alternative C

Designating 839,730 acres as Category 2 land (334,370 acres less than Alternative A) would tend to benefit recreation due to the fact that land desirable for recreation would likely be Category 3 (retention), while land targeted for acquisition would likely improve access or recreational opportunity.

Alternative D

Designating 1,300,500 acres within the resource area as Category 2 lands (126,400 more than Alternative A) would improve opportunities to gain access to preferred recreation areas.

IMPACTS FROM ACCESS MANAGEMENT

All Alternatives

Identifying 17, 41, 24, and 38 areas for improved access (Alternatives A, B, C, and D respectively) would indicate where public access is restricted or non existent and could now be actively pursued. Public access would meet the increasing demand for a variety of recreational experiences such as hunting, fishing, horseback riding, and backpacking in an unrestricted natural setting.

CUMULATIVE IMPACTS ON RECREATION MANAGEMENT

All Alternatives

Designating SRMAs would provide specific and structured recreation opportunities, in a defined area, as specified in a recreation activity management plan (RAMP--Alternative A) or an integrated activity plan (IAP--Alternatives B, C, and D). Designating ERMAs would provide unstructured and limited recreation opportunities and custodial management for all areas not designated as SRMAs.

Alternative A

Continuing to designate Piceance Basin as a SRMA would provide structured hunting and camping opportunities on 210,000 acres.

Effective protection of important, critical, and desired recreational settings would be maintained. Desired recreational settings and opportunities would remain except where replaced by mineral and other development. There would be no significant impacts on the extensive use of BLM lands for recreational purposes as a result of other resource management.

Alternative B

Designating the lower White River/Kenney Reservoir as an SRMA would provide floatboating, picnicking, wildlife viewing, and camping opportunities on 4,890 acres.

Developing recreational activities, increasing ACEC acreage, acquiring access, and developing facilities would increase recreational opportunities. An increase in area protected by stipulations could increase recreation

opportunities:

- An additional 2,338 acres would be closed to locatable mineral development

- An additional 45,396 acres would be designated with NSO stipulations to protect potential T&E plant habitat

- An additional 6,610 acres would be proposed as ACECs to protect sensitive plants/RVA

- An additional 11,233 acres of NSO to protect wildlife habitat

Alternative C

Designating Rangely as an SRMA would provide mountain biking, boating, fishing, camping, picnicking, and environmental education/study on 410,800 acres. Designating Black Mountain/Windy Gulch (26,470 acres) as an SRMA would provide structured opportunities for hunting, horseback riding, hiking, backpacking, wildlife viewing, and nature study.

Adverse impacts on recreational resource opportunity would be significantly decreased from Alternative A by the application of 37,570 acres of NSO and 128,380 acres of CSU for protection of wildlife populations and habitat, which could improve recreational opportunities for hunting, viewing, or photographing these species.

Alternative D

Managing the Blue Mountain GRA and the White River ACEC as the White River ERMA would target hunting, mountain biking, scenic viewing, horseback riding, pleasure driving (Blue Mountain) and floatboating, canoeing, warm-water fishing, and camping (White River).

Stipulating 37,570 acres of NSO and 128,380 acres of CSU for protection of wildlife populations and habitat could improve recreational opportunities for hunting, viewing or photographing these species.

Designating an additional 45,396 acres of NSO on potential T&E plant habitat and 39,390 acres of ACEC addition to protect sensitive plants/RVAs would enhance natural settings and provide improved solitary experiences for recreationists seeking those values.

IMPACTS ON CULTURAL RESOURCES MANAGEMENT

IMPACTS FROM CULTURAL RESOURCES MANAGEMENT

All Alternatives

Revising the boundaries of the Canyon Pintado National Historic District would increase the size of the historic district and increase protection for an additional 20 to 30 cultural resources that are estimated to occur within the revised boundary.

Continuing to conduct cultural resource inventories prior to authorizing any surface-disturbing activities would lead to the discovery of new cultural artifacts and recordation of those sites. Recordation of the sites would add to our scientific data base. The number of sites recorded would vary by alternative, depending upon the number of acres disturbed by proposed surface-disturbing activities -- the more acres of surface disturbance the more sites recorded. More surface disturbance would occur and more cultural artifacts would be recorded under Alternatives A and B than under Alternatives C and D.

Attaching cultural resource mitigation measures (also known as conditions of approval) to permits and land authorizations would reduce or eliminate damage to cultural resources. Continuing to consult the State Historic Preservation Officer in developing mitigation measures would continue to ensure cultural resources are properly protected.

Continuing to support cooperative research efforts with the Archeological Research Institute, which includes public education/awareness, would improve the identification, recording and protection of cultural resources.

Cooperating in the development of an interpretation/outreach program by developing interpretive displays at or near a minimum of four cultural resource sites would help to educate and inform the public about cultural resources. Monitoring resources to gauge impacts where interpretive facilities are erected would reduce vandalism through awareness education.

Developing a site patrol and protection plan, in conformance with ARPA 1979, as amended, would reduce the threat to and loss of resources and scientific data due to unauthorized collecting and acts of vandalism.

IMPACTS FROM AIR QUALITY MANAGEMENT

All Alternatives

Continuing to reduce concentrations of air pollutants that contribute to acid deposition or particulate deposition, particularly on rock art, would slow the rate of cultural resource deterioration.

IMPACTS FROM SOILS AND SURFACE WATER MANAGEMENT

Alternative A

Reducing erosion rates through erosion control projects would prevent the destruction of scientific archaeological data caused by erosion. Conversely, exposure of previously buried and unknown resource could expand the cultural resources data base. Although some cultural artifacts could be destroyed by the erosion control projects, conducting site-specific inventories prior to beginning the projects would ensure the preservation of cultural resources data. The number of artifacts recorded and destroyed as a result of erosion control projects would vary by alternative depending upon the number of projects undertaken.

Alternative B

Failing to apply surface stipulations to ground-disturbing activities in areas of fragile soil would result in increased impacts to cultural resources due to increased erosion. Applying measures relevant to the protection of cultural resources would probably eliminate loss of resources and/or scientific data due to direct impacts. However, the indirect impacts that result from soil erosion could result in loss of a large enough number of resources and scientific data to be regarded as serious and significant.

Requiring inventory and other stipulations for water stabilization projects would reduce loss of resources due to construction. Not implementing watershed protection actions would result in a significant reduction in the number of new resources identified and evaluated.

Alternative C

Stipulating NSO on approximately 35,700 acres to protect landslide areas and NSO on 791,300 acres to protect fragile soil areas would reduce development-related impacts to cultural and historical resources. Up to 11,814 resources (at one per 70 acres) could be protected.

Other impacts to cultural resources as a result of soils and surface water management would be similar to those described under Alternative A.

Alternative D

Designating NSO and CSU on 498,000 acres of fragile soil exceeding 35 percent slope, in an effort to control erosion and surface water salinity could protect an estimated 7,114 cultural resources from development-related impacts.

IMPACTS FROM ALL SURFACE-DISTURBING ACTIVITIES

All Alternatives

Surface-disturbance associated with activities such as mineral development, vegetation manipulation, timberland and woodland harvesting and the like would directly and indirectly destroy cultural artifacts and their archaeological context. Direct impacts would occur from as the surface and subsurface is disturbed by development, e.g., road and surface facility construction, vegetation and overburden removal, dewatering wells, and the like. Indirect impacts would occur as the result of increased access and visibility of the cultural resources. Increased access and visibility would increase unauthorized collection and other vandalism.

Cultural resource inventories and mitigation measures, developed in consultation with the State Historic Preservation Officer and Advisory Council on Historic Preservation, would reduce the loss of significant scientific data. Surface stipulations in this RMP would also help reduce loss of scientific data and destruction of the artifacts. The amount of protection afforded by the surface stipulations, especially NSO and to a lesser extent CSU, would vary by alternative depending upon the number of acres subject to the surface stipulations. Table 4-1, Cumulative Impacts on Soils Section, lists the number of acres, by alternative, subject to surface stipulations.

NSO stipulations would prevent disturbance of the surface and also destruction of cultural sites. These stipulations also would result in not conducting as many inventories and thus decrease the amount of information recorded in the process of locating new sites.

IMPACTS FROM RIPARIAN MANAGEMENT

Alternative A

Improving riparian vegetation conditions by limiting grazing or prohibiting commercial wood harvesting would reduce losses caused by erosion, artifact trampling and crushing or disrupting archaeological contexts. Cultural resource inventories would reduce potential adverse impacts to cultural resources are reduced.

Alternative B

Restoring or improving only high priority riparian areas would reduce acres treated and result in a decrease in identification and recording of cultural resources.

Alternatives C and D

Closing riparian areas to motorized vehicle travel would protect cultural and/or historical resources from direct impacts. Applying mitigation measures to road relocation efforts to avoid riparian areas would reduce impacts to cultural and historical resources. An estimated 408 acres would have designated restrictions, with the potential to involve an estimated 6 cultural resources (actual number may vary).

IMPACTS FROM SPECIAL STATUS PLANT AND ANIMAL AND ACEC MANAGEMENT

Alternative A

NSO stipulations on known T/E and special status habitat (1,440 acres) would prevent surface-disturbing activities within the NSO areas and thus prevent destruction of cultural resources on that acreage.

CSU stipulations on six existing ACECs would reduce disturbance and destruction of cultural resources, especially in the Raven Ridge ACEC which is an area with high potential for cultural resource occurrence. CSU stipulations on Dudley Bluffs Yank's Gulch/Upper Greasewood Creek ACECs would reduce disturbance and destruction of cultural resources in areas with low potential for occurrence.

Alternative B

NSO stipulations on known T/E and special status habitat (1,440 acres) and on potential habitat of sensitive plants and RVAs (4,520 acres) would prevent surface-disturbing activities within the NSO areas and thus prevent destruction of cultural resources on that acreage.

Designating an additional 45,396 acres of NSO stipulations would protect potential T&E habitat and cultural resources in the Parachute, 13-mile, and Raven Ridge addition areas. Approximately 6,610 additional acres would be proposed for ACEC designation to protect sensitive plants and/or remnant plant associations and would protect an estimated 94 cultural resources in those areas from development-related impacts.

Alternative C

NSO stipulations on known T/E and special status habitat (1,440 acres) and on potential habitat of sensitive plants and RVAs (4,520 acres) would prevent surface-disturbing activities within the NSO areas and thus prevent destruction of cultural resources on that acreage.

Closing all known and potential habitats of T/E plants and candidate T/E plants (46,836 acres) to motorized vehicle travel, except on designated roads and trails, would provide protection for an estimated 669 cultural resources.

Proposing ACEC designation for an additional 39,390 acres, to protect sensitive plant species and remnant vegetation associations, would provide protection for an estimated 688 cultural resources.

Alternative D

NSO stipulations on known T/E and special status habitat (1,440 acres) and on potential habitat of sensitive plants and RVAs (4,520 acres) would prevent surface-disturbing activities within the NSO areas and thus prevent destruction of cultural resources on that acreage.

Closing all known and potential habitats of T/E plants and candidate T/E plants (46,836 acres) to motorized vehicle travel, except on designated roads and trails, would provide protection for an estimated 669 cultural resources.

Proposing South Cathedral Bluffs and the Raven Ridge additions as ACECs, adding 3,900 acres for protection of sensitive plants and RVAs, would provide protection for an estimated 56 cultural resource sites.

IMPACTS FROM WILD HORSE MANAGEMENT

Alternatives A and D

No impacts

Alternative B

Removing horses in excess of established HMA numbers would reduce the amount of trampling on horizontal surfaces and rubbing on standing features that cultural resources experience. Shifting the boundaries of the Piceance HMA to exclude the upper part of the Boxelder Allotment and pasture C of the Square S Allotment would shift impacts in those areas to new areas that may or may not already be impacted by wild horses.

Alternative C

Reducing horse numbers from current levels to the recommended numbers would reduce the impacts to cultural and historical resources caused by trampling.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Continuing to protect 81,970 acres of Black Mountain, Windy Gulch, Oil Spring Mountain, Bull Canyon, Willow Creek, and Skull Creek WSAs as wilderness, during interim management, would protect cultural and historical resources from all direct and indirect impacts associated with ground-disturbing actions.

Nondesignation of wilderness and the return of WSAs to multiple resource management and development could result in significant impacts to cultural and historical resources.

IMPACTS FROM RECREATION MANAGEMENT

Alternative A

Continuing to designate Piceance Basin as a SRMA would cause indirect impacts to cultural resources such as graffiti, unauthorized collection, and trampling as new trails and facilities are developed. This could result in an increase in the loss of scientific data.

Alternative B

Designating the lower White River/Kenney Reservoir (4,890 acres) as a SRMA would cause indirect impacts to cultural resources such as grafitti, unauthorized collection, and trampling as new facilities are developed, resulting in an increase in the loss of scientific data.

Alternative C

Designating Black Mountain/Windy Gulch (26,470 acres) and Rangely (410,800 acres) as SRMAs would increase direct impacts to cultural resources due to facilities construction. Secondary impacts such as unauthorized collection, graffiti on rock art panels, etc., would be much greater. Mitigation measures would be more difficult to implement and the potential for significant loss of resources and/or scientific data is much higher than under Alternative A.

Alternative D

Designating the Blue Mountain GRA and the White River ACEC for management to provide specific recreation activity opportunities and physical, social, and managerial settings for targeted recreation experiences would increase cultural impacts as a result of the increase in mountain biking and/or hiking trails, particularly those that link the Kokopeli Trail to the south with Yampa River trails to the north.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Continuing to open the resource area to unrestricted motorized vehicle travel, except for 66,065 acres closed to all motorized vehicle travel, would directly and indirectly impact cultural resources located on and off roads and trails.

Alternative B

Restricting motorized vehicle traffic to existing roads and trails and reducing road density to 1.5 miles per square mile would provide increased protection for cultural resources.

Closing 49,575 acres to motorized vehicle travel would help protect cultural resources in those areas.

Alternatives C and D

Restricting motorized vehicle use to designated roads and trails would significantly reduce impacts to cultural and historical resources. However, in those cases where the designated road or trail crosses or makes physical contact with a cultural resource, impacts would continue to occur in the same manner and degree as in the past.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

Alternative A

Continuing to identify 19,798 as Category 1 land (available for disposal) could potentially affect 282 cultural resources, assuming an average site density of one resource per 70 acres. Identifying approximately 1,174,100 acres of Category 2 lands for disposal by means other than sale could potentially affect 16,773 resources, assuming one resource per 70 acres. Resources are not evenly distributed across the resource area and it is most unlikely that more than 10 percent of that figure would be impacted.

Alternative B

Making 9,600 acres suitable for disposal by sale could impact and estimated 137 resources. Designating approximately 949,900 acres of Category 2 lands as being available for disposal by means other than sale would affect an estimated 13,570 cultural resources.

Alternative C

Identifying 9,600 acres as Category 1 lands (10,200 acres less than Alternative A), and suitable for disposal by sale, could impact approximately 137 resources.

Making 839,730 acres of Category 2 lands (334,370 acres less than Alternative A) available for disposal on a conditional and case-by-case basis would impact an estimated 12,000 cultural resources.

Alternative D

Designating a total of 9,600 acres as Category 1 lands (10,200 acres less than Alternative A) and suitable for disposal by sale could impact approximately 137 resources.

Identifying 1,300,500 acres as Category 2 lands (126,400 more than Alternative A), as available for disposal on a conditional and case-by-case basis, could impact an estimated 18,580 cultural resources.

IMPACTS FROM ACCESS MANAGEMENT

Alternative A

Acquisition of vehicular access to Bitter Creek, Soldier Creek, Lake Creek, Upper East Douglas Creek and Big Beaver Creek could increase the exposure of cultural resources in these areas to indirect impacts due to improved access to the area. Current inventory data for those areas do not permit an estimation of the number of cultural resources potentially involved.

Alternative B

Having fewer areas with public access than were identified under Alternative A suggests that fewer resources would be exposed to increased human activity, unauthorized collection and vandalism.

Alternative C

Closing additional roads would significantly increase the number of cultural resources that receive protection while reclaiming roads that are closed and abandoned could present some threats to cultural resources. Applying inventory requirements and other stipulations should be adequate to reduce or prevent further adverse impacts.

Alternative D

Improving public access in areas where none currently exists would increase the threat of impacts to cultural resources from trampling, unauthorized collection and vandalism.

IMPACTS FROM FIRE MANAGEMENT

Alternative A

Continuing to protect archaeological and historical values from damage by fire would require suppression on a total of 21,796 acres. Wild fires are a more serious threat than prescribed burn fires. With controlled burns the objective is to limit maximum burn temperatures and limit fire to a specified area. Control lines may be laid out in advance and best management practices can be applied to prevent damage to cultural resources.

Alternatives B, C, and D

Suppressing fire that threatens archaeological and historical values, especially rock art, would protect identified and potential sites on approximately 256,296 acres.

CUMULATIVE IMPACTS ON CULTURAL RESOURCES MANAGEMENT

All Alternatives

Surface-disturbance associated with activities such as mineral development, vegetation manipulation, timberland and woodland harvesting and the like would destroy an unquantifiable number of cultural resources. The increased access and visibility that would occur as a result of these activities would increase unauthorized collection and other vandalism.

Cultural resource inventories and mitigation measures, developed in consultation with the State Historic Preservation Officer and Advisory Council on Historic Preservation, would reduce the loss of significant scientific data. Surface stipulations in this RMP would also help reduce loss of scientific data and destruction of the artifacts. The amount of protection afforded by the surface stipulations, especially NSO and to a lesser extent CSU, would vary by alternative depending upon the number of acres subject to the surface stipulations. Table 4-1, Cumulative Impacts on Soils Section, lists the number of acres, by alternative, subject to surface stipulations.

NSO stipulations would prevent disturbance of the surface and also destruction of cultural sites. These stipulations also would result in not conducting as many inventories and thus decrease the amount of information recorded in the process of locating new sites.

IMPACTS ON PALEONTOLOGICAL RESOURCES MANAGEMENT

IMPACTS FROM PALEONTOLOGICAL RESOURCES MANAGEMENT

All Alternatives

Requiring individuals and institutions conducting paleontological work in the resource area to meet certain minimal standards, requiring fossils to be curated in adequate repositories, and making fossils available to researchers, would ensure that valuable data are recorded and disseminated in an orderly and professional manner.

Requiring inventory of Class I fossil formations would have beneficial impacts for fossils by identifying, recording, and evaluating an increased number of fossil localities. Requiring relocation of roads, pipelines or wellpads would ensure that fragile fossil resources are not destroyed by construction.

IMPACTS FROM SOILS AND SURFACE WATER MANAGEMENT

All Alternatives

Reducing soil erosion would benefit fossil resources, especially fossils of small species, by reducing the numbers of bones and bone fragments washed away or destroyed by the abrasive action caused during transport in eroding soils. However, soil erosion in some instances would make fossils more likely to be found. Controlling water-caused erosion would benefit fossil resources by reducing direct loss of fossils from the formations where stream channels and fossil localities coincide.

Continuing to require inventory on Class I formations prior to ground- disturbing actions would ensure that loss of significant fossils and/or scientific data is minimized.

IMPACTS FROM ALL SURFACE-DISTURBING ACTIVITIES

All Alternatives

Surface-disturbance associated with activities such as mineral development, vegetation manipulation, timberland and woodland harvesting and the like would destroy fossil resources if those activities occur on Class I fossil formations. Impacts would include crushing of individual skeleton elements, dislocation and possible disarticulation of bones, and/or total destruction of fossil localities during construction activities. However, activities would also expose fossil that may normally not have been found. Requiring inventory of Class I fossil formations would have beneficial impacts for fossils by identifying, recording, and evaluating an increased number of fossil localities. Requiring relocation of roads, pipelines or wellpads would ensure that fragile fossil resources are not destroyed by construction.

Surface stipulations in this RMP would also help reduce destruction of the fossils. The amount of protection afforded by the surface stipulations, especially NSO and to a lesser extent CSU, would vary by alternative depending upon the number of acres subject to the surface stipulations. Table 4-1, Cumulative Impacts on Soils Section, lists the number of acres, by alternative, subject to surface stipulations.

NSO stipulations would prevent disturbance of the surface and also destruction of cultural sites. These stipulations also would result in not conducting as many inventories and thus decrease the amount of information recorded in the process of locating additional fossil sites.

Open-pit mining of oil shale and coal in Class I fossil formation would have the greatest impact since large areas are needed for overburden and other mine wastes as well as the mine pit itself. Large numbers of fossils and fossil locations could either be buried too deep to be relocated or totally destroyed as they are excavated for the mine pit. Requiring inventory on new leases for open pit mines would result in the location, recordation, evaluation and excavation of more fossil sites than might otherwise be the case without mining. Managing existing leases in accordance with existing lease terms and conditions could result in loss of fossil resources without any data recovery. Voluntary recordation and excavation of fossil localities would be sought on Class I formation within current leases in order to reduce loss of fossil resources due to development.

IMPACTS FROM SPECIAL STATUS PLANTS AND ACEC MANAGEMENT

Alternative A

Continuing to designate Dudley Bluffs (1,630 acres), Yanks Gulch/Upper Greasewood Creek (2,680 acres), and Raven Ridge (2,090 acres) for protection of known threatened and endangered plant habitat would also protect fossils and scientific data where Class I paleontological formations coincide with known locations of special status plants.

Designating Deer Gulch (1,810 acres), Lower Greasewood Creek (210 acres), and South Cathedral Bluffs (320 acres) for protection, by NSO, of sensitive plants and remnant vegetation associations would protect Class I paleontological formations where they coincide with special status plants.

Alternative B

Stipulating NSO on 46,840 acres, to protect known and potential habitat of threatened, endangered, or candidate plant species, would also protect Class I fossil formations which may be present from development-related loss.

Stipulating NSO on 4,520 acres to protect sensitive plants and remnant vegetation associations would also protect paleontological resources from development-related loss. However, reductions in soil disturbance activities would also potentially reduce the number of fossil localities that might be identified, recorded and evaluated.

Alternative C

Closing all known and potential habitats of T/E plants and candidate T/E plants (46,836 acres) to motorized vehicle travel, except on designated roads and trails, would provide protection for paleontological resources. On Class I formations and localities with sensitive plant species and remnant vegetation associations, paleontological resources would be protected from development-related impacts by NSO stipulations.

Proposing ACEC designation for an additional 39,390 acres, to protect sensitive plant species and remnant vegetation associations, would provide protection for paleontological resources.

Proposing Blacks Gulch and Coal Draw for ACEC designation, with 800 and 1,840 acres respectively, would protect significant fossil resources. A portion of the

proposed Raven Ridge ACEC addition, c.a. 1,360 acres, would also be recommended on the basis of significant paleontological resources and to protect those resources from development- related impacts. The fossils located within the proposed ACECs are regarded to be of particular value because of, but not limited to, their abundance, scientific data and potential educational value.

Alternative D

Closing all known and potential habitats of T/E plants and candidate T/E plants (46,836 acres) to motorized vehicle travel, except on designated roads and trails, would provide protection for paleontological resources.

Proposing South Cathedral Bluffs and the Raven Ridge additions as ACECs, adding 3,900 acres for protection of sensitive plants and RVAs, would provide protection for paleontological resources.

Proposing Blacks Gulch and Coal Draw for ACEC designation, with 800 and 1,840 acres respectively, would protect significant fossil resources. A portion of the proposed Raven Ridge ACEC addition, c.a. 1,360 acres, would also be recommended on the basis of significant paleontological resources and to protect those resources from development- related impacts. The fossils located within the proposed ACECs are regarded to be of particular value because of, but not limited to, their abundance, scientific data and potential educational value.

IMPACTS FROM WILDERNESS MANAGEMENT

All Alternatives

Continuing to protect 81,970 acres of Black Mountain, Windy Gulch, Oil Spring Mountain, Bull Canyon, Willow Creek, and Skull Creek WSAs as wilderness, during interim management, would protect paleontological resources from all direct and indirect impacts associated with ground-disturbing actions.

Nondesignation of wilderness and the return of WSAs to multiple resource management and development could result in significant impacts to paleontological resources.

IMPACTS FROM RECREATION MANAGEMENT

Alternative A

Continuing to designate Piceance Basin as a SRMA would cause indirect impacts to paleontological resources such as graffiti, unauthorized collection, and trampling as new trails and facilities are developed. This could result in an increase in the loss of scientific data.

Alternative B

Designating the lower White River/Kenney Reservoir (4,890 acres) as a SRMA would result in an increase in unauthorized fossil collection where trails cross Class I fossil formations or localities. Inventory stipulations would be applied to all visitor facilities in order to prevent construction- related impacts and loss of scientific data. Loss of paleontological resources and scientific data from unauthorized collection could continue and possibly increase with increased visitation.

Alternative C

Designating Black Mountain/Windy Gulch (26,470 acres) and Rangely (410,800 acres) as SRMAs would increase direct impacts to paleontological resources due to facilities construction. Secondary impacts such as unauthorized collection and trampling would be much greater. Mitigation measures would be more difficult to implement and the potential for significant loss of resources and/or scientific data is much higher than under Alternative A. Inventory stipulations would be applied to all visitor facilities in order to prevent construction- related impacts and loss of scientific data. Loss of paleontological resources and scientific data from unauthorized collection could continue and possibly increase with increased visitation.

Alternative D

Designating the Blue Mountain GRA and the White River ACEC for management to provide specific recreation activity opportunities and physical, social, and managerial settings for targeted recreation experiences would increase paleontological impacts as a result of the increase in mountain biking and/or hiking trails, particularly those that link the Kokopeli Trail to the south with Yampa River trails to the north. Increased development of trails and increased visitor use could result in an increase in unauthorized fossil collection. Mitigation measures that do not detract from the

historic or scenic qualities of the trail may be possible should facilities or trails occur on sensitive formations or localities.

IMPACTS FROM MOTORIZED VEHICLE TRAVEL MANAGEMENT

Alternative A

Continuing to open the resource area to unrestricted motorized vehicle travel, except for 66,065 acres closed to all motorized vehicle travel, would directly and indirectly impact paleontological resources located on and off roads and trails. Restricting motorized vehicle travel in fragile soils areas that are also Class I fossil formations would benefit paleontological resources by reducing direct impacts associated with unrestricted motorized vehicle travel.

Alternative B

Restricting motorized vehicle travel to existing roads and trails and closing approximately 58,875 acres to motorized vehicle travel would be beneficial to paleontological resources. Fossils would be protected from both direct and indirect impacts of motorized vehicle traffic except where existing roads and trails, that remain open, cross Class I localities.

Alternatives C and D

Restricting motorized vehicles to designated roads and trails would significantly reduce impacts to Class I fossil formations. Inventory requirements for new roads and trails would provide a mechanism for further reducing negative impacts to fossil resources.

Closing Skull Creek, Willow Creek, Bull Canyon WSAs, Oil Spring Mountain and Moosehead Mountain ACECs, the Oak Ridge Special Wildlife Area, fragile soils areas, high- and medium-priority riparian areas, and the Hogback area to motorized vehicle use would protect Class I paleontological formations from motorized vehicle travel-related impacts.

IMPACTS FROM LAND TENURE ADJUSTMENTS MANAGEMENT

All Alternative

Dispose of Category 1 lands (19,800 acres) would have serious adverse effects on fossil resources by transferring them out of public ownership, resulting in loss of scientific data. However, application of inventory requirements and other stipulations, along with the criteria to retain lands with significant paleontological resources, would ensure that losses from disposal are minimized.

IMPACTS FROM WITHDRAWALS MANAGEMENT

Alternatives A, B, and D

No impacts

Alternative C

Withdrawing an additional 31,600 acres, including Moosehead road closure, Oak Ridge State Wildlife area, and Canyon Pintado National Register District would provide protection for fossil resources from losses by the new withdrawals. The specific benefit and protection would be determined in part by the nature and wording of the withdrawal for each area.

IMPACTS FROM FIRE MANAGEMENT

All Alternatives

Constructing fireline would adversely impact previously unrecorded paleontological resources where construction occurs on Class I fossil formations. As more data are gathered, it would be possible to avoid surface-disturbing line construction on known fossil localities and reduce impacts to significant fossil resources.

Requiring fossil inventories on wildfire suppression and prescribed burning to prevent the loss of significant paleontological resources or scientific data, as a result of fireline construction, would ensure that impacts to paleontological resources are reduced to the lowest possible level.

CUMULATIVE IMPACTS ON PALEONTOLOGICAL RESOURCES

All Alternatives

Although current data are inadequate to quantify the extent or significance of the loss of scientifically-significant fossil resources, the surface stipulations, including the CSU stipulation that requires inventories in Class I formations prior to approving surface-disturbing activities, would provide protection from disturbance activities.

IMPACTS ON LAND USE AUTHORIZATIONS MANAGEMENT

IMPACTS FROM MANAGEMENT OF SENSITIVE RESOURCES

All Alternatives

The identification of exclusion and avoidance areas and, ultimately, open areas is directed by other programs as a result of attempting to protect sensitive resources such as fragile soils, riparian habitat, special status plants, critical wildlife habitat, wilderness values, scenic values, and cultural resources, to name a few. These sensitive areas are designated as no lease/no surface disturbance, and no surface occupancy (NSO)/no surface disturbance. No lease areas are exclusion areas, and NSO areas are avoidance areas for land use authorizations with the exception of Moosehead Mountain ACEC. Moosehead Mountain ACEC is NSO and exclusion.

Classifying BLM lands as avoidance and exclusion to protect sensitive resources would increase costs for some companies that develop facilities under the various lands and realty use authorizations. This would be due to increased costs of labor, supplies and transportation based on potentially longer routes and the need to use more distant sites, costs related to requirements for utilization of more expensive development and rehabilitation practices, and/or delays in project completion. Based on the fact that development is not precluded in avoidance areas, and the fact that exclusion areas are small and or widely scattered throughout the resource area, no projects would be expected to be precluded or foregone.

The increases in costs may be commensurate with the number of acres designated as avoidance or exclusion. Table 4-14 (see Cumulative Impacts on Land Use Authorizations) lists these acres by alternative.

Designating a maximum acreage of formal right-of-way corridors under Alternative A would allow utility companies maximum flexibility in siting major future facilities. The degree to which this impact would actually be realized would depend on future demand, and whether or not proposed routes actually coincide with these corridors.

Designating minimum acreage of formal right-of-way corridors under Alternatives B and D affect utility companies by limiting their flexibility in siting major future facilities. On the other hand, having these corridors available would streamline the processing of applications to some extent, if these corridors are adequate for the facilities that may be proposed. Ultimately, the nature and degree of this impact would depend upon future demand and whether or not proposed routes would actually coincide with these corridors.

CUMULATIVE IMPACTS ON LAND USE AUTHORIZATIONS MANAGEMENT

All Alternatives

Classifying BLM lands as avoidance and exclusion to protect sensitive resources would increase costs for some companies that develop facilities under the various lands and realty use authorizations. Based on the fact that development is not precluded in avoidance areas, and the fact that exclusion areas are small and or widely scattered throughout the resource area, no projects would be expected to be precluded or foregone.

The increases in costs may be commensurate with the number of acres designated as avoidance or exclusion. Table 4-14 lists these acres by alternative.

Table 4-14. Acres of Avoidance and Exclusion Areas

Classification	Alt A	Alt B	Alt C	Alt D
Avoidance	36,773	69,082	1,000,858	187,048
Exclusion	44,583	97,249	106,246	106,246

Designating a minimum acreage of formal right-of-way corridors would limit flexibility in siting major future facilities but would streamline the processing of applications to some extent if corridors are adequate for the facilities proposed. Ultimately, the nature and degree of this impact would depend upon future demand and whether or not proposed routes would actually coincide with these corridors.

IMPACTS ON SOCIOECONOMICS MANAGEMENT

IMPACTS FROM MANAGEMENT OF SENSITIVE RESOURCES

All Alternatives

The identification of no lease areas and surface stipulations exclusion, ultimately, open areas for development directed by other programs as a result of attempting to protect sensitive resources such as fragile soils, riparian habitat, special status plants, critical wildlife habitat, wilderness values, scenic values, and cultural resources, to name a few. These sensitive areas are designated as no lease/no surface disturbance, no surface occupancy (NSO)/no surface disturbance, Controlled surface use (CSU)/conditioned disturbance, and timing limitations (TL) areas. No lease areas exclude mineral leasing and development. For activities other than leasing, no lease areas are NSO and CSU stipulation areas. NSO precludes most surface development while CSU and TL stipulations place restrictions on the methods and times of development.

Applying surface stipulations on BLM lands to protect sensitive resources would increase costs of development for some companies due to increased costs of labor, supplies and transportation based on potentially longer routes and the need to use more distant sites, costs related to requirements for use of more expensive development and rehabilitation practices, and/or delays in project completion. Any increased operating costs would lower the potential for economic production. While surface stipulations would increase costs and lower production somewhat, they would not likely have a measurable economic impact on development.

The increases in costs would be commensurate with the number of acres designated as no lease, NSO, CSU and TL stipulation areas (see Table 4-1, Cumulative Impacts on Soils Section).

IMPACTS FROM WOODLANDS MANAGEMENT

Alternative A

The potential sale of 7,680 cords annually would support the resource area income and employment and produce $92,160 annually in federal revenue for approximately 90 years. Following removal of mature woodlands outside the Piceance Basin (approximately 90 years), the annual harvest level would be reduced to 260 cords/year, reducing the annual federal income to $3,120.

Alternative B

The potential sale of 1,920 cords annually would support resource area income and employment and produce $23,040 annually in federal revenue for approximately 75 years. Following removal of mature woodlands (approximately 75 years) the harvest rate would reduced by approximately 80 percent to 384 cords/year, reducing the annual federal income to $4,608.

Alternatives C and D

The potential sale of 360 cords annually would support resource area income and employment and produce $4,320 annually in federal revenue indefinitely.

IMPACTS FROM RECREATION MANAGEMENT

Alternative A

Economic benefits from recreation would be enhanced and would be concentrated on those businesses providing recreation sales and service for hunting activity.

Alternative B

Economic benefits from recreation would be medium but unmeasured and would depend on the area of the impact. Benefits would occur in those businesses providing recreation sales and services.

Alternatives C and D

Some economic benefits from recreation opportunities would be lost while some economic benefits would be gained from increased recreation opportunities. Some restrictions would provide negative and positive economic impact based on user preference.

CUMULATIVE IMPACTS ON SOCIOECONOMICS MANAGEMENT

Alternatives A and B

The cumulative impact on the local economy is likely to be beneficial. The actual impact is localized but not presently quantified.

Alternatives C and D

The cumulative impact on the local economy may be slightly negative but not large. The actual impact is localized but not presently quantified.

IMPACTS ON ECOSYSTEM INTEGRITY/BIOLOGICAL DIVERSITY MANAGEMENT

Ecosystem is defined in *Biological Diversity on Federal Lands* (The Keystone Center, 1991) as "The organisms of a particular habitat together with the physical environment in which they live; a dynamic complex of plant and animal communities and their associated non-living environment." The integrity and resilience of ecological systems is supported by the maintenance of biological diversity. Biological diversity is the variety and variability of life and its parts and processes, including:

1. Genetic diversity within and among populations
2. Population recovery, visibility, productivity, and sustainability
3. Community richness, structure, composition, and function, and
4. Landscape variety, pattern, connectedness, resilience, and integrity

In order to estimate the impacts to biological diversity maintenance, from the application of each alternative, no attempt was made to measure biological diversity against optimum ecological conditions, since it is virtually impossible to make those determinations. Rather, alternatives were measured against each other. The alternatives were evaluated by assessing the cumulative impacts on each resource, and assigning values from 1 to 4, with 4 being assigned to the alternative which would demonstrate the greatest potential for achieving biological diversity. The criteria used to evaluate biological diversity potential and rank alternatives were the following ecosystem management goals from *What is Ecosystem Management* (R. Edward Grumbine, 1993):

1. Maintain viable populations of all native species in situ.
2. Represent, within protected areas, all native ecosystem types across their natural range of variation.
3. Maintain evolutionary and ecological processes (i.e., disturbance regimes, hydrological processes, nutrient cycles, etc.)
4. Manage over periods of time long enough to maintain the evolutionary potential of species and ecosystems.
5. Accommodate human use and occupancy within these constraints.

The resource components of each alternative were rated based on the above ecosystem goals. The following resources, were not used to rank alternatives because their management, although important to ecosystem management, does not change between alternatives: air quality, water rights, locatable minerals, sensitive plants and RVA, wilderness, wild and scenic rivers, and socioeconomics.

Alternative A ranked lowest in biological diversity potential because of fewer plant community and riparian improvements, fewer surface stipulations protecting wildlife nesting, roosting, and production sites, less protection of visual landscapes, and less protection from the impacts of recreation and motorized vehicle travel. Alternative B ranked as the third best alternative, with greater biological diversity potential than A considering the above factors, but ranked far below C and D due to the lack of surface stipulations protecting watersheds, the emphasis on commodity production rather than multi-resource

enhancement, and less protection for wildlife, visual resources, and special status plants.

Alternatives C and D rated a magnitude of 2 above Alternatives A and B, suggesting a much greater potential for enhancing biological diversity (see Table 4-15). Alternative C rated slightly higher than D for criteria 1 through 4, but when the last goal of ecosystem management is considered, Alternative D better emphasizes the vital role that people play in all aspects of ecosystem management. Alternative D accommodates human use and occupancy within the constraints of goals 1 through 4 and is clearly the better alternative based on diversity and the political reality of providing goods and services to the public (i.e., BLM's multiple-use mandate).

Table 4-15. Effects of Cumulative Impacts on Ecosystem Integrity/Biological Diversity

Proposed Management	Ranking of Alternatives			
	A	B	C	D
Soils	2	1	4	3
Surface Water	2	1	4	3
Ground Water	2	1	3	3
Oil and Gas	2	1	4	3
Oil Shale	1	2	4	3
Sodium	1	2	4	3
Coal	1	2	4	3
Mineral Materials	2	1	4	3
Plant Communities	1	2	3	3
Noxious and Problem Weeds	1	2	3	3
Riparian	1	2	2	2
T&E and Special Status Plants	1	2	3	3
Timberlands	1	2	3	3
Woodlands	1	2	3	3
Livestock Grazing	1	2	3	3
Wild Horse	1	2	3	4
Big Game	2	1	4	3
Non-T&E Raptors	1	2	4	3
Grouse	2	1	4	3
Fisheries	1	2	4	3
Special Status Wildlife	1	2	4	3
Visual Resources	1	2	4	3
Recreation	1	2	3	3

Table 4-15 continued

Proposed Management	Ranking of Alternatives			
	A	B	C	D
Motorized Vehicle Travel	1	2	3	3
Cultural Resources	1	1	3	2
Paleontological Resources	1	1	3	2
Land Use Authorizations	1	2	4	3
Total	**34**	**45**	**94**	**79**

CHAPTER 5
CONSULTATION AND COORDINATION

CHAPTER 5
CONSULTATION AND COORDINATION

INTRODUCTION

The draft White River RMP and EIS was prepared by an interdisciplinary team of specialists from the White River Resource Area office. The RMP and EIS process included resource inventory, digital data capture for the BLM's Geographic Information System analysis, public participation, interagency coordination, and preparation of a management situation analysis (on file at the White River Resource Area office).

PUBLIC PARTICIPATION

Throughout the preparation of this draft RMP and EIS, concerns and interests of all publics were addressed in a variety of public participation activities. The area manager, team leader, and team members met with county commissioners, environmental and interest groups, the Craig BLM District Advisory Council (representatives who advise the District Manager on local land issues), the Craig BLM Grazing Advisory Board, and other concerned citizens.

On June 21, 1990, a Notice of Intent to prepare a Resource Management Plan was published in the *Federal Register*. This notice began the formal planning process. At the same time, a scoping newsletter was mailed to 1,235 individuals, organizations, agencies, special interest groups, the media, business interests, and academic institutions inviting them to participate in the planning process. The general public was informed through news releases.

The contents of the scoping newsletter included an invitation for all publics to attend a series of three evening public meetings held in Rangely, Meeker, and Grand Junction, Colorado, during June 1990. The purpose of the newsletter and the meetings was to explain the goals and objectives of the RMP and EIS and identify, discuss, and clarify issues and management concerns related to the plan. Issue statements and comments were accepted from the public by mail and at the public meetings.

A work group of 24 representatives of various interest and user groups was formed at the scoping meetings to provide an on-going review and comments on various portions of the draft RMP and EIS. This work group met to provide feedback on the development of management alternatives, the RMP and EIS process, and the selection of the Preferred Alternative.

In October 1991, a second newsletter was sent to the contact/distribution list outlining three alternatives to be considered in analyzing the impacts of various management decisions upon the affected environment. This newsletter included a summary table of major decisions that could be made under the range of alternatives.

CONTACT/DISTRIBUTION LIST

During preparation of this draft RMP and EIS, various federal agencies, state, and local governments and agencies, interest groups, and individuals were contacted for information and data. This draft document will be mailed to numerous agencies, organizations, and individuals. A partial list of contacts and recipients follows:

FEDERAL AGENCIES

EPR-DEA Federal Energy Regulatory Commission
Federal Energy Regulatory Commission
Federal Highway Administration
Secretary of the Army
U.S. Air Force-CR/ROV
  Assistant Secretary of the Air Force
  Bolling Air Force Base
U.S. Army Corps of Engineers
U.S. Department of Defense, Corps of Engineers
U.S. Department of Energy
  Laramie Energy Technology Center
U.S. Department of Transportation
U.S. Environmental Protection Agency
U.S. Government Printing Office
USDA, Colorado ASCS Office
USDA, Forest Service
USDA, Rio Blanco County ASCS Office
USDA, Soil Conservation Service
USDI, Bureau of Indian Affairs
USDI, Bureau of Land Management

USDI, Bureau of Mines
USDI, Bureau of Reclamation
USDI, Fish & Wildlife Service
USDI, Geological Survey
USDI, Interagency Fire Center, Boise
USDI, Lands & Minerals Management
USDI, Mineral Management Service
USDI, National Park Service
USDI, Office of Environmental Project Review
USDI, Office of Surface Mining
  and Reclamation Enforcement
USDI, Water and Science
USDOE, Western Area Power Administration

COLORADO STATE AGENCIES

Board of Land Commissioners
Colorado State University
Commission on Higher Education
Department of Education
Department of Energy
  Conservation
Department of Health
Department of Highways
Department of Natural Resources
  Natural Resources Defence Council
Department of Social Services
Division of Water Resources
Division of Wildlife
Geologist Survey
Historical Society
  Advisory Council on Historic Preservation
Soil Conservation Districts
State Forest Service
Water Conservation Board

COUNTY GOVERNMENTS AND AGENCIES

Garfield County Planner
Garfield School District
Glenwood Chamber of Commerce
Grand Junction Chamber of Commerce
Mesa County Planning Department
Moffat County Commissioners
Moffat County Planning Department
Northwest Colorado Council of Governments
Rifle Chamber of Commerce
Rio Blanco County Commissioners
Rio Blanco County Planning Department
Western Rio Blanco County Parks
  and Recreation District

MUNICIPAL GOVERNMENTS

Associate Governments of Northwest
  Colorado
Colorado West Area Council of
  Governments
Grand Junction, City of
Meeker, Mayor of
Rangely, Town of
Rifle, City of

CONGRESSIONAL AND LEGISLATIVE OFFICES

Senators/Representatives
  Senator William Armstrong
  Senator William Cohen
  Senator Tim Wirth
  Senator Ben Nighthorse Campbell
Governor/State Senator/Representative
  Senator Tilman M. Bishop

INTEREST GROUPS AND ORGANIZATIONS

A J Oil Company
ATC Realty Eight Incorporated
Adolph Coors Company
Alta Energy Corporation
Amax Coal Company
American Cometra
American National Petroleum Company
American Resources Management Corporation
American Rivers
American Youth Hostels
Amoco Pipeline Company
Amoco Production Company
Arch Oil & Gas Company
Audubon Society of West Colorado Incorporated

Beartooth Oil & Gas Company
Beem Oil & Gas Company
Benton Engineering
Biggs, W Gale Associates
Bluebell Oil Company
Bogle Farms
Boies-Norell Ranch
Brenex Oil Company
Brownlee Cattle Company
Buckles Ranch
Burke Brothers
Burkhalter Engineering Company
Burr & Cooley
Bush Oil Company
C&G Roustabout Service
CHD Operating Incorporated
CHM Hill
Callister Company
Carter Mining Company
Center for Plant Conservation
Center for Government Research Incorporated
Chancellor & Ridgeway
Chandler & Associates Incorporated
Chaparral Resources Incorporated
Chevron USA Incorporated
Coastal Oil & Gas Corporation
Colorado Cattlemen's Association
Colorado Environmental Coalition
Colorado Farm Bureau
Colorado Indian Council
Colorado Mountain Club
Colorado Native Plant Society
Colorado Off-Highway Vehicle Coalition
Colorado River Conservation District
Colorado University Wilderness Study Group
Colorado-Ute Electric Association
Colorado Wildlife Association
Colorado Wool Growers Association
Colowyo Coal Company
Congress, Library of
Conoco Incorporated
Consolidation Coal Company
Cox Brothers
Cripple Cowboy Cowoutfit
Daub & Associates
Delany & Balcomb
Denver Museum of Natural History
Dinosaur National Monument
EMRX Corporation
Environmental Defense Fund
Environmental Strategies, Incorporated
Equity Oil Company
Eros Data Center
Ertl Trust
Exxon Coal Resources USA Incorporated
Exxon Company USA
Fina Oil & Chemical Company
Fuel Resources Development Company
Garfield-Eagle League of Woman
Gordon Engineering Incorporated
Grace Petroleum Corporation
Graham Royalty, LTD.
Grand Valley Resources, Incorporated
Great Northern Gas Company
Grynberg Petroleum Company
Halandras Brothers
Halliburton Geophysical Services
Harvard University
Hayes Petroleum Company
Holmes and Roberts
Homestake Mining Company
Industrial Gas Services Incorporated
Intermountain Soils Incorporated
J & D Associates
J & P Sheep Company
J C Oil Company
Jacobs Engineering Group
Jacobs Land & Livestock
Jones & Stokes Associates Incorporated
K Ranch
Kaiser Francis Oil Company
Keystone Ranch
Ko, Kenneth C. & Associates Incorporated
Leonard Resources
Los Alamos National Laboratory
Louff Exploration Company
Mantle Ranch
Marathon Oil Company
Master Petroleum & Development Company, Incorporated
Meridian Oil Incorporated
Mesa County Land Conservancy
Mid Continent Resources Incorporated
Mitchell Energy Corporation
Mobil Oil Corporation
Morapos Sheep Company
Morrison-Knudsen Engineers Incorporated
Museum of Western Colorado
NaTec Resources
National Fuel Corporation
National Wildlife Federation
Natural Resources Defense Council
Nature Conservancy, The

New Paraho Corporation
NORA
Northern Geophysical of America
Northwestern University
Occidental Oil Shale Incorporated
Occidental Petroleum Corp
Oklahoma State University
Oldland Brothers
Oryx Energy Company
Pace Consultants
Pace Synthetic Fuels Report
Papoulas Livestock Company
Parker & Parsley Petroleum Company
Peacock Oil Company
Petrotech Incorporated
Phillips Petroleum Company
PIC Technologies, Incorporated
Pioneer Archaeological Consultant
Pioneer Oil & Gas
Pioneers Hospital
Piute Energy Company
Polfam Exploration Company
Premium Oil Company
Public Access Coalition
Public Lands Institute
Questar
Quinoco Petroleum Incorporated
RTP Associates
Reading & Bates Coal Company
Resource Intelligence
Rio Blanco County Stockgrowers
Rio Blanco Natural Gas Company
Rio Blanco Oil Shale Company
Rio Mesa Resources Incorporated
Rocky Mountain Oil & Gas Association
San Diego State University
Saunders, Snyder, Ross & Dickson, P.C.
Schuh & Associates, Incorporated
Seely Land & Livestock Company
Sharon Resources Incorporated
Shell Oil Company
Shell Western E&P Incorporated
Shipley Association
Society for Range Management
Southern Ute Tribe
Southland Royalty Company
Southwest Missouri State University
Southwest Research & Information Center
Spade Livestock, Incorporated
Standard Oil Company (Indiana)
System Application Incorporated
TXP Incorporated
Tenneco Oil Company
Texaco Incorporated
Texas Technical University
Theos Swallow Fork Ranches
Three Springs Ranch
Three States Oil Company
Timberline Energy Incorporated
Tribal Business Committee
Tribal Museum
Tri-Island Land & Cattle Company
Twin Arrow Incorporated
Twin Buttes Ranch Company
Two Tanks Oil Company
Two-J Oil Company
UNICAL Corporation
Uintah County Library
Union Oil Company of California
Union Pacific Railroad
United Brotherhood of Carpenters
United Farm Agency
University of Arizona
University of Colorado at Boulder
University of Colorado at Denver
University of Northern Colorado
University of Southern Colorado
Upper Colorado Environmental Plant Center Utah, State of
Utah Division of State History
Utah International Incorporated
Utah State University
Ute Mountain Tribe
Villard Brothers
Villard Petroleum Incorporated
Vincent Brothers
Vista Del Sol Ranch
Western Aquatics Incorporated
Western Fuels Association Incorporated
Western Gas Supply
Western Geophysical
Western Interstate Energy Board
Western Utility Group
Wexpro Company
White Rose Exploration, Incorporated
WHOA, Eastern Representative
Willard Pease Oil & Gas Company
Winslett Ranch Incorporated
Wyoming Advocates for Animals

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Although several individuals had primary responsibility for preparing sections of the Draft RMP and EIS, the document itself was an interdisciplinary team effort. An internal review of the document was conducted at each stage of its preparation. Specialists at the district and state levels of the Bureau of Land Management were consulted and reviewed the analysis and supplied information. Contributions by individual specialists may be subject to revision by other specialists and by management staff members during the internal review process.

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Name	Office	Primary Responsibility	Education	Years of Experience
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*Transferred during preparation of the Preliminary Draft RMP

APPENDIXES

APPENDIX A
BEST MANAGEMENT PRACTICES

This appendix lists best management practices (BMPs), designed to reduce or prevent environmental impacts. BMPs will be used to design BLM-initiated projects and to develop conditions of approval for proponent-initiated projects. They will often be prescribed and applied as a system of practices rather than a single practice. BMPs must be ecologically site-specific while reflecting political, social, economic, and feasibility considerations.

The term, BMP, has traditionally been used to describe water-quality prevention methods, measures, or practices. In this appendix, the term is used to describe methods, measures, and practices designed to reduce or prevent impacts on all resources, including water quality.

BMPs in this appendix will be used to supplement rather than supersede or replace existing design requirements in BLM manuals. Projects will be monitored to determine the accuracy of BMP implementation and the effectiveness of the practices. Monitoring will be designed to optimize the use of existing data and collection methodology.

ROADS

1. Road project planning, design, construction, maintenance, and record-keeping activities should be conducted according to BLM Manual 9113.

ROAD LOCATION

1. Locate roads so as to minimize their influence on riparian areas and, when stream crossing is necessary, design the approach and crossing perpendicular to the channel. Locate the crossing where the channel is well-defined, unobstructed and straight.

2. Locate roads on stable positions (e.g., ridges, natural benches, and flatter transitional slopes near ridges and valley bottoms). Implement extra mitigation measures when crossing areas of unstable or fragile soils.

3. Avoid headwalls, midslope locations on steep unstable slopes, seeps, old landslides, slopes in excess of 70 percent, and areas where the geologic bedding planes or weathering surfaces are inclined with the slope.

4. Locate roads to minimize heights of cutbanks. Avoid high, steeply sloping cutbanks in highly fractured bedrock.

5. Locate roads on well-drained soil types. Roll the grade to avoid wet areas.

ROAD DESIGN

1. Base road design criteria and standards on road management objectives such as traffic requirements of the proposed activity and the overall transportation plan, economic analysis, safety requirements, resource objectives, and minimizing damage to the environment.

2. Road Surface Configurations

a. Outsloping - Sloping the road prism to the outside edge for surface drainage is normally recommended for local spurs or minor collector roads where low volume traffic and lower traffic speeds are anticipated. It is also recommended in situations where long intervals between maintenance will occur and where minimum excavation is wanted. Outsloping is not recommended on gradients greater than 8 to 10 percent.

b. Insloping - Sloping the road prism to the inside edge is an acceptable practice on roads with gradients more than 10 percent and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure.

c. Crown and Ditch - This form is recommended for arterial and collector roads where traffic volume, speed, intensity and user comfort are considerations. Gradients may range from 2 to 15 percent as long as adequate drainage away from the road surface and ditchlines is maintained.

3. Minimize excavation through the following actions: use of balanced earthwork, narrow road width, and endhauling where slopes are greater than 60 percent.

4. Surface roads if they will be subject to traffic during wet weather. The depth and gradation of surfacing will be determined by traffic type, frequency, weight, maintenance objectives, and the stability and strength of the road foundation and surface materials.

5. Provide vegetative or artificial stabilization of cut and fill slopes in the design process. Avoid establishment of vegetation where it inhibits drainage from the road surface or where it restricts safety or maintenance.

6. When roads are located in low-lying areas, ensure that the road surface is constructed above the adjacent ground surface.

ROAD CONSTRUCTION

1. Avoid sidecasting where it will adversely affect water quality or weaken stabilized slopes.

2. Provide for erosion-resistant surface drainage prior to fall rain or snow.

ROAD IMPROVEMENT

1. Improve flat gradients to a minimum of two percent or provide raised subgrade sections to avoid saturation of the road prism.

2. Reconstruct culvert catchbasins to specifications (See IX.D and F). Catchbasins in solid rock need not be reconstructed provided water flow is not restricted by soil, rock, or other debris.

3. Identify potential water problems caused by off-site disturbance and add necessary drainage facilities.

4. Identify ditchline and outlet erosion caused by excessive flows and add necessary drainage facilities and armoring.

5. Replace undersized culverts and repair or replace damaged culverts and downspouts.

6. Add additional full-rounds, half-rounds, and energy dissipators as needed.

7. Correct special drainage problems (e.g., high water table, seeps) that affect stability of subgrade by using perforated drains, geotextiles, or drainage bays.

8. Eliminate undesirable berms that retard normal surface runoff.

9. Restore outslope or crown sections.

10. Avoid disturbing backslope while reconstructing ditches.

11. Surface inadequately-surfaced roads that are to be left open to traffic during wet weather.

12. Require roadside brushing be done in a way that prevents disturbance to root systems (i.e., avoid using excavators for brushing).

PERMANENT ROAD CLOSURE

1. Leave abandoned roads in a condition that provides adequate drainage without further maintenance.

2. Close roads to traffic. Physically obstruct the road with a gate or as many large berms, trenches, logs, stumps, or rock boulders as necessary to accomplish permanent closure.

3. Rip road base and seed.

SEASONAL ROAD CLOSURE

1. When seasonal activity is completed and road closure is not necessary, the road surface should be crowned, outsloped, insloped, or water-barred.

2. Remove berms from the outside edge where runoff is channeled.

3. Close roads to traffic.

ROAD MAINTENANCE

1. Perform blading and shaping to conserve existing surface material, retain the original crowned or outsloped self-draining cross section, prevent or

remove rutting berms (except those designed for slope protection) and other irregularities that retard normal surface runoff. Avoid wasting loose ditch or surface material over the shoulder where it can cause stream sedimentation or weaken slump-prone areas. Avoid undercutting backslopes.

2. Promptly remove slide material when it is obstructing road surface and ditchline drainage. Save all soil or material useable for quarry reclamation and stockpile for future reclamation projects. Use remaining slide material for needed road improvement or place in a stable waste area. Avoid sidecasting of slide material where it can damage, overload, saturate embankments, or flow into downslope drainage courses. Reestablish vegetation in areas where more than 50 percent of vegetation has been destroyed due to sidecasting.

3. Retain vegetation on cut slopes unless it poses a safety hazard or restricts maintenance activities. Cut roadside vegetation rather than pulling it out and disturbing the soil.

BRIDGES

1. Bridges should be designed and constructed according to the standards provided in BLM Manual 9112. The design, review, and evaluation must be accomplished under the direct supervision of a registered professional engineer.

BRIDGE LOCATION

1. Bridges should be located on straight stable/rocky stretches of rivers or streams, avoiding meandering channels and bank areas prone to continued erosion.

2. Align bridges perpendicular to the channel and in areas that will have the least adverse effect upon short and long-term riverine habitat.

BRIDGE INSTALLATION

1. If the installation of a bridge would result in the discharge of soil into water, a permit must be obtained from the U.S. Army Corps of Engineers according to Section 404 of the *Clean Water Act of 1977.*

CULVERTS

1. Culverts should be designed and constructed according to the standards provided in BLM Manual 9112. The design, review and evaluation must be accomplished under the direct supervision of a registered professional engineer.

CULVERT DESIGN

1. Design stream crossings for adequate passage of fish, minimum impact on water quality and to handle peak runoff and flood waters. Use culverts with a minimum diameter of 18 inches for permanent stream crossings and cross drains.

2. Design cross drains in ephemeral or intermittent channels to lay on solid ground rather than on fill material to avoid road failures.

3. In areas where the native material is unsuitable for construction of the cross drain, proper aggregate shall be brought in and the entire drain constructed with this material.

4. Culvert drainage should be directed through a vegetation filter before reaching the stream.

5. Locate culverts or drainage dips in such a manner as to avoid discharge onto unstable terrain such as headwalls, slumps, or block failure zones. Provide adequate spacing to avoid accumulation of water in ditches or surfaces through these areas.

6. Provide energy dissipators (e.g., rock material) at culvert outlets or drain dips where water is discharged onto loose material or erodible soil or steep slopes.

7. Place protective rock at culvert entrance to streamline water flow and reduce erosion.

8. Install cross drains according to the following frequency guide:

Percent Grade	Spacing between Cross Drains (feet)
1-6	300
7-9	200
10-14	150
15-20	90
21-40	50
Over 41	25

9. Use drainage dips for culverts on roads that have gradients less than 10 percent or where road management objectives result in blocking roads. Avoid drainage dips on road gradients greater than 10 percent.

10. Do not locate drainage dips where water might accumulate or where there is an outside berm that prevents drainage from the roadway.

11. Locate and design drainage dips immediately upgrade of stream crossings, providing buffers and sediment basins, to prevent sediment from entering the stream.

PERMANENT CULVERT INSTALLATION

1. Confine culvert installation to the low flow period (generally June 15 to September 15) to minimize sedimentation.

2. Limit activities of mechanized equipment in the stream channel to the area necessary for installation of the culvert.

3. Place permanent stream-crossing structures on fishery streams before heavy equipment moves beyond the crossing area. Where this is not feasible, install temporary crossings to minimize stream disturbance (when practical, consider the use of a 20-foot railroad flatcar as a temporary crossing).

4. Use 12 inches as the minimum recommended cover over a culvert, or one-half the diameter, whichever is greater.

CULVERT AND DITCH MAINTENANCE

1. Monitor culvert installations to ensure adequate armoring of inlet and outlet and no erosion of design. Patrol areas susceptible to road or watershed damage during periods of high runoff.

2. Keep road inlet and outlet ditches, catchbasins, and culverts free of obstructions, particularly before and during spring runoff. However, hold routine machine-cleaning of ditches to a minimum during wet weather.

SURFACE-DISTURBING ACTIVITIES

MINING

1. No mineral operations using chemical processing or similar toxic pollutant activities will be allowed within 200 feet of all water bodies.

2. Prohibit or require special mitigation for road construction, clearing vegetation, hazard tree removal, mining waste disposal, and other surface-disturbing activities that would degrade water quality or riparian/wetland habitat.

3. Locate and maintain sanitation facilities according to state regulations.

OIL AND GAS DRILLING

1. When preparing the site, all suitable topsoil should be stripped from the surface of the location and stockpiled for reclamation once the location is abandoned. When topsoil is stockpiled on slopes exceeding five percent, construct a berm or trench below the stockpile.

2. All trees shall be cut with a maximum stump height of six inches. The bole and limbs shall be cut into four-foot lengths down to a four-inch diameter. Material under four inches may be scattered onto the surrounding area, chipped and scattered or burned in the reserve pit. If material is burned, the operator must obtain a state burning permit and

notify the Rio Blanco County Sheriff's office one day before burning. BLM has the right to restrict burning during periods of high fire danger.

3. When other mineral resources or fresh water aquifers could be affected by the drilling operation, adequate protection shall be provided to ensure that drilling will not adversely affect these resources.

4. Sedimentation from the drilling site shall be diverted and/or run through catchment basins to protect surface water.

5. All wells, whether drilling, producing, suspended, or abandoned, shall be identified following 43 CFR 3162.6. Pressure tests are required before drilling out from under all casing strings set and cemented in place. Blowout preventer controls must be installed prior to drilling out the surface shoe and prior to starting workover or completion operations. Preventers will be inspected and operated at least daily to insure good mechanical working order. This inspection will be recorded on the daily drilling report. Preventers will be pressure tested before drilling out from below each casing string. All BOP pressure tests must be recorded on the daily drilling report.

6. Construct a dike around the tank battery of sufficient capacity to adequately contain at least 110 percent of the storage capacity of the largest tank within the dike.

7. The reserve pit will be constructed so that leaking or breaching problems are minimized and reclamation potential is maximized. At least 50 percent of the pit capacity shall be in cut material. When fractured rock or porous materials are encountered, the reserve pit shall be lined with bentonite or an impermeable membrane to prevent leakage.

8. Any sediment control structures, or disposal pit, will be designed to contain a 100-year, 6-hour storm event. Storage volumes within these structures will have a design life of 25 years.

9. All pits constructed in high and medium priority riparian areas (see Tables 2-30 and 2-31), will be lined by Onshore Order #7.

10. The reserve pit will be fenced on three sides prior to drilling activity and closed off on the fourth side after drilling is finished. All corners will be braced with an H-type brace. The fence construction will be on cut or undisturbed surface. Within the wild horse range, the reserve pit fence shall be 84 inches high. The bottom 48 inches will be woven wire and the top 36 inches will be three strands of barbed wire. The reserve pit fence shall be four strands of barbed wire and will be no closer than four feet to the top of the reserve pit slopes. When constructed within cattle allotments. Pits constructed within sheep allotments shall have fences constructed out of 4' high woven wire.

11. Remove all oil from the surface of reserve pits within 24 hours.

12. All produced liquids shall be contained including the dehydrator vent/condensate line effluent. All production pits shall have a livestock-proof fence. All pits shall be bermed. If inverted culverts are used as production pits, the culvert top may be covered with an expanded metal cover in lieu of fencing.

13. If air drilling, the operator shall control blooie line discharge dust by use of water injection or any other acceptable method. The blooie line discharge shall be a minimum of 100 feet from the well head and be directed into the blooie pit in such a manner as to allow containment of drill bit cuttings and waste in blooie pit.

14. Pits remaining after the drilling period which store or are expected to store ponded production fluids will be wired or netted over to prevent or discourage entry by larger birds attracted to sources of water, including raptors and waterfowl. At a minimum, wire will be stretched over the entire length and breadth of the pit at intervals not exceeding three feet, and made permanently conspicuous either by choice of material or installation of flagging material evenly distributed across the pit at a minimum rate of one flag per 18 square feet.

15. Reserve pits will be allowed to dry through natural evaporation for up to one year after the well is drilled. If a pit has not dried by the end of this period, all remaining fluids and/or mud must be removed and disposed of in an approved manner.

The pit shall be filled and recontoured within 15 months after the well is drilled.

16. All trees on the location and proposed access roads shall be purchased from the Bureau of Land Management, White River Resource Area. On roads and pads, the trees shall be cut with a maximum stump height of six inches and disposed of by one of the following methods:

a. Trees may not be dozed off the location or access road. On roads and pads, trees shall be cut into four-foot lengths down to a four-inch diameter and placed along the access road or pad.

b. Removed from federal land for resale or private use. Limbs may be scattered off the location or access road but not dozed off.

c. Chipped and scattered.

17. All activity shall cease when soils or road surfaces become saturated to a depth of three inches, unless otherwise approved by the Authorized Officer.

18. There shall be no mud blading on the access roads. Vehicles may be towed through the mud provided they stay within the roadway.

19. Plugging Standards:

a. Open Hole: a cement plug shall be placed to extend at least from 50 feet below the bottom (except as limited by total depth (TD) or plugged back total depth (PBTD) to 50 feet above the top of (1) any zones encountered during drilling that contain fluid with a potential to migrate; (2) lost circulation zones; and (3) any potential valuable minerals, including noncommercial hydrocarbons, coal, and oil shale. Extremely thick sections may be secured by placing 100-foot plugs across the top and bottom of the formation. Lost circulation zones may require alternate methods. In absence of productive zones or minerals that otherwise required placement of cement plugs, long sections of open hole shall be plugged at least every 3,000 feet. Such plugs shall be placed across in-gauge sections of the hole.

b. Cased Hole: a cement plug shall be placed opposite all open perforations and extend a minimum of 50 feet below (except as limited by TD or PBTD) to 50 feet above the perforated interval. In lieu of the cement plug, a bridge plug is acceptable, provided (1) the plug is set as close as practical above the open perforations; (2) the perforations are isolated from any open hole below; and (3) the plug is capped--if cap is placed through tubing, a minimum of 50 feet of fill-up is required; if placed by bailer, a minimum of 35 feet of fill-up is needed. If production casing is cut and recovered, a cement plug shall be placed to extend at least 50 feet above and below the stub. An additional cement plug shall be placed to extend a minimum of 50 feet above and below the shoe of the surface casing (or intermediate string, as appropriate). The exposed hole resulting from the casing removal must be secured as required above.

c. Annular Space: no annular space that extends to the surface shall be left open to the drilled hole below. If this condition exists, a minimum of the top 50 feet of annulus shall be plugged with cement.

d. Testing: the first plug below the surface plug shall generally be tested by either tagging the plug with the working pipe string or pressuring to a minimum pump (surface) pressure of 1,000 psig with no more than a 10 percent drop during a 15-minute period (cased hole only). If the integrity of any other plug is questioned, it must be tested in the same manner. Also, any cement plug that is the only isolating medium for a fresh water interval or a zone containing a valuable mineral deposit should be tested by tagging with the drill string. Tagging the first plug below the surface plug will not be necessary where water flows or valuable mineral deposits have not been encountered.

e. Surface Plug: a cement plug of at least 50 feet shall be placed in the smallest casing that extends to the surface. The top of this plug shall be placed as near the eventual casing cut-off point as possible.

f. Mud: each interval between the plugs shall be filled with mud of sufficient density to exert hydrostatic pressure exceeding the greatest formation pressure encountered while drilling such interval. In the absence of other information at the time plugging is approved, a minimum mud weight of nine pounds per gallon shall be specified.

g. Surface Cap: all casing shall be cut off at the base of the cellar or three feet below final restored ground level (whichever is deeper). The casing

shall be filled from the cement plug to the surface with suitable material (cement, sand, gravel, etc.). The well bore must then be covered with a metal plate at least 1/4-inch thick, welded in place, or a four-inch pipe, ten feet in length, four feet above ground and embedded in cement as specified by the authorized officer. The well location and identity shall be permanently inscribed.

20. Within 30 days of release of the drilling rig, the operator must furnish to BLM a list of all drilling and completion fluids and additives used for this well. The list will include the trade name of each additive, a chemical description of it (by specific chemical name) or material name, the number of containers used and the quantity of material in each container, the name of the manufacturer, and the name of the mud company contracted for drilling.

21. The concentration of hazardous substances in the reserve pit at the time of pit backfilling must not exceed the standards set forth in CERCLA.

22. All aquifers encountered during drilling that have potential for development as a water well would be evaluated for use by BLM prior to plugging the well. Suitable wells would need to meet Colorado water well completion standards and have applicable permits filed with the state.

GEOPHYSICAL EXPLORATION

1. Blasting or vibrating within 1/8-mile of federally-owned or controlled springs and flowing water wells must be approved in writing by the Area Manager.

2. The operator shall avoid any operations when soil conditions are saturated; activity may be prohibited by the Area Manager during wet or heavy snow periods.

3. Plugging of drill holes will conform to the Colorado Reclamation Standards Abandoned Drill Holes Act. Drill hole cuttings shall be returned to the hole.

4. No blading or other dirt work will be allowed without written permission from the Area Manager.

5. Rehabilitation of disturbed areas shall be performed concurrent with the exploration operation.

FOREST STAND TREATMENTS

1. Timber stand improvement and harvesting will be prohibited in riparian areas unless removing undesirable species or prescribing canopy manipulation and management as a means of enhancing riparian development. Adequate buffers will be designated next to riparian areas, considering the following factors:

a. Harvest intensity - clearcuts require a wider buffer than selection cuts.

b. Slope - Steep slopes require wider buffers than gentle slopes.

c. Aspect - North aspects will require narrower buffers due to more dense vegetative cover and slower runoff.

d. Soil - Sensitive soil will require wider buffers than resilient soil.

2. Stand treatments shall be designed to minimize adverse effects on water quality. The distribution of cutting units, intensity of cutting, and the cumulative effects in a watershed shall be considered when formulating stand prescriptions.

3. The closure of new roads will be considered and planned for during sale preparation according to existing policy. Skid trails and access roads within the sale will be reclaimed.

4. Stand treatments shall be monitored and terminated during periods when soil compaction may occur.

5. Timber and woodland sale areas with less than a 15 percent ground cover in the understory on critical deer and elk winter ranges will be seeded with a mixture of grasses, forbs and shrubs approved by the Area Manager.

PIPELINE AND POWER LINE CONSTRUCTION

1. Construction width shall include the existing road. The pipeline shall be located two to three feet from the edge of the ditch along the existing road. The existing road shall be on the working side of the trench.

2. Right-of-ways will use areas adjoining or adjacent to previously disturbed areas whenever possible, rather than traverse undisturbed communities.

3. The pipeline will be buried to provide a minimum cover of 36 inches through normal terrain. The pipeline will be buried deep enough to avoid problems with irrigation ditches, canals, potential irrigation areas and existing pipelines, as designated by the authorized officer. In rocky areas, a minimum cover of 24 inches will be provided. In areas next to or crossing access roads, the pipeline shall be buried with a minimum of four feet of cover in alluvial areas and three feet of cover in rocky areas.

4. Water bars or dikes shall be constructed on all of the rights-of-way, and across the full width of the disturbed area, as directed by the authorized officer.

5. Slopes within the disturbed area shall be stabilized by non-vegetative practices designed to hold the soil in place and minimize erosion. Vegetative cover shall be reestablished to increase infiltration and provide additional protection from erosion.

6. When erosion is anticipated, sediment barriers shall be constructed to slow runoff, allow deposition of sediment, and prevent it from leaving the site. In addition, straining or filtration mechanisms may also contribute to sediment removal from runoff.

7. All trees on the pipeline right-of-way shall be purchased from the Bureau of Land Management, White River Resource Area.

8. Trees removed during pipeline construction shall be retained in order to preventing vehicular travel. Following seeding, these trees will be skidded back onto the right-of-way. Those trees not brought back onto the right-of-way will be cut into four-foot lengths down to a four-inch diameter and located to allow removal by the applicant or public.

9. Unless other wise agreed upon in writing, power lines shall be constructed according to standards as outlined in *Suggested Practices for Raptor Protection on Power Lines,* Raptor Research Foundation, Inc., 1981. The BLM reserves the right to require modifications or additions to all power line structures placed on the right-of-way, should they be necessary to ensure the safety of large perching birds.

10. Poles and transmission lines will be selected to achieve the minimum practicable adverse impact on visual quality.

11. Blading or excavating to prepare a structure framing pad will not be germitted. If a structure cannot be framed on the natural ground, aerial framing or off-site framing will be necessary.

FENCE LOCATION, DESIGN, AND CONSTRUCTION

1. Fence design will conform to BLM Manual H 1737-1 to accommodate negotiation by big game and minimize fence damage. Modifications to fence design may be authorized on a case-by-case basis by the Area Manager as necessary to satisfy special fencing objectives.

2. Be specific when fencing to accomplish resource objectives. Various kinds, sizes and sexes of animals may require precise fence designs for inclusion or exclusion. Fences should be built to accommodate or exclude wildlife and with no adverse effect upon migration routes.

3. To minimize future trespass litigation, the accurate location, survey, and marking of external property boundaries should precede fence construction.

4. Locate fences for easy access while satisfying operational objectives. Avoid fencing straight up and down hills.

5. Design fences to accommodate winter snow levels and drifting snow. Inspect fences in late winter or early spring to identify deficiencies and make necessary design changes.

6. Consider the installation of narrow walk-through gates, post pass-through openings, or other access structures to improve esthetics.

7. Use landforms to reduce visual impacts. Avoid bulldozer clearing or major soil disturbance.

8. Use fences to protect natural wetlands, streambanks, woodlands, and plants. Keep fences away from heavy vegetation and areas of potential blowdown.

9. Off-highway vehicular traffic during construction shall be held to a minimum.

10. On allotments used by wild horses, fences will be designed to have minimal impact on horse movement.

COAL EXPLORATION

1. All drill holes must be plugged with cement through the underground minable coal beds and aquifers for a distance of at least 50 feet above and below the coal beds and aquifers.

2. Holes may be plugged with a mud conditioner subject to the following:

a. Drill holes encountering aquifers having artesian flow shall be plugged from bottom to top with a neat cement slurry or, at a minimum, be cemented across to a minimum of 50 feet on either side of the aquifer.

b. Other drill holes not plugged with cement shall be plugged with abandonment mud having a 10-second API gel strength of at least 20 pounds per 100 square feet and a filtrate volume not to exceed 13.5 cc, as determined by accepted procedures. The abandonment mud mix shall have a Marsh Funnel viscosity of at least 20 seconds per quart greater than that of the drilling fluid or at least 55 seconds Marsh Funnel viscosity.

3. All drill holes shall be plugged at the surface with a minimum of five feet of cement.

4. Holes must be plugged as soon after drilling as possible.

5. Any hole proposed for groundwater monitoring must be completed and cemented to isolate all aquifer intervals that show significant head differences or changes in water quality to prevent mixing of unlike waters. Minable coal beds also must be isolated be casing and cement.

6. All drill fluid, foam, cuttings, and water must be contained on the drill site. Portable pits may be used; however, earth pits will be required if large volumes of fluid are encountered. Pits will be pumped out or allowed to dry completely before backfilling. Drill cuttings not returned to the hole shall be buried, hauled away, or scattered in a thin layer so they do not inhibit plant growth.

PROTECTION OF ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES DURING LAND DISTURBANCE

1. Class I geologic units (the Chinle, Glen Canyon, Morrison, Cedar Mountain, Mowry Shale, Parachute Creek Member of Green River, Wasatch, and Brown's Park formations and, in the Rangely area, the Mesaverde Group and Unita formations) shall be surface surveyed for paleontological resources if they have good, safe outcrops likely to produce scientifically-important fossils. Class I geologic units having vertical- to near-vertical (unsafe) slopes, soil development, and much vegetation shall not require surveys as these areas are unlikely to produce recoverable fossils.

2. Class II geologic units shall be sample-surveyed for paleontological resources during large-scale pipeline development (longer than 10 miles) and any surface-disturbing activity, project, or land exchange greater than 100 acres. Up to 5 percent of potentially-disturbed Class II areas shall be inventoried.

3. If any fossils are discovered during project operations, operators shall cease activity immediately and notify the authorized officer. The BLM shall provide the operator with a list of BLM-approved paleontologists. The company shall hire a paleontologist from the approved list. The selected paleontologist would be given 48 hours to inspect the site and make a decision regarding disposition of the fossils.

4. If fossils are encountered during underground mining, the operator shall move the fossil material to a safe place and immediately notify the authorized officer.

5. If any evidence of human skeletal remains is encountered during a project on BLM lands, the operator shall not disturb these remains and shall immediately notify the authorized officer. Work shall not resume until the authorized officer has given permission. Human remains shall not be moved, excavated, or in any way disturbed by the operator.

6. A Class III (100% pedestrian) cultural resource inventory shall be completed by a qualified archaeologist prior to beginning land disturbing activities or prior to beginning any project on designated Class I fossil formations with shallow soils and formation outcrops. A report of the inventory will be submitted and approved by the BLM with stipulations necessary to comply with EO 11593 and Section 106 of the National Historic Preservation Act of 1966.

7. If, during its operations, the operator discovers any cultural remains, monuments or sites, paleontological sites, or any object of antiquity subject to the Antiquities Act of June 8, 1906 (34 Stat. 225; 16 U.S.C. secs. 431-433), the Archaeological Resources Protection Act of 1979 (Public Law 96-95), or 43 CFR, Part 3, activity shall immediately cease and the Area Manager notified. The BLM will then take such action as required under the acts and regulations thereunder. The operator shall follow the mitigation requirements set forth concerning protection, preservation, or disposition of any sites or material discovered. In cases where salvage excavation is necessary, the cost of excavation shall be borne by the holder, unless otherwise stated.

WILDFIRE SUPPRESSION

1. The use of heavy equipment for fire suppression will not be permitted except on high-risk project fires, when limited use is first approved by the Area Manager and continuously monitored by a Resource Advisor (Range Conservationist, Wildlife Biologist, Hydrologist or Archaeologist).

2. The location and construction of handlines will implement methods that result in minimal surface disturbance while effectively controlling the fire. Handcrews shall locate lines to take full advantage of existing land features that represent natural fire barriers. Whenever possible, handlines should follow the contour of the slope to protect the soil, provide sufficient residual vegetation to capture and retain sediment, and maintain site productivity.

3. The width of the handline should normally be proportional to the percent slope (lines on the contour of steeper slopes must be wider).

4. Suppression in riparian areas shall be by handcrew only and concentrate on areas of heavy fuels. Vehicle entry into the riparian area will be permitted to establish pumping operations and access water only if no bridges or natural stream crossings are in the burn area.

5. The incident commander will ensure that aerial retardant is not dropped into any stream or wetland. Retardant applications shall be outside riparian areas and parallel to the stream course.

6. Fire mop-up will include rehabilitation of handlines. Waterbars will be located to minimize future channeling of runoff and direct the runoff toward areas of natural vegetative filters. Vegetation will be returned to the handline to help prevent erosion.

7. Emergency rehabilitation plans shall be prepared for fires requiring artificial regeneration to stabilize the burn area or fireline. The rehab plan should be developed through the interdisciplinary process with the objective of restoring resource quality and productivity.

WATER DEVELOPMENT

1. Water developments (springs, reservoirs, catchments, wells, pipeline and water troughs) will conform to BLM Manual H 1741-2.

2. On some allotments, proposed and existing water developments will be fenced to provide livestock management by restricting access to water and to reduce the cost required to fence some allotments

and eliminate restricted wild horse movements created by pasture fences.

3. Actual work in spring and stream beds will be done by hand where possible.

4. The source of all spring developments shall be fenced.

5. Cuts, fills, and excavations shall be dressed and blended with surroundings. Pipelines will be buried where possible. Vegetation will be planted on disturbed areas.

6. Fence reservoirs, where possible to create riparian vegetation and wildlife habitat providing water to livestock through water gaps in the fence or piped to a water trough.

VEGETATION MANIPULATION

LIVESTOCK GRAZING

1. Integrated Activity Plans should include a recovery plan for all degraded riparian areas within an ecosystem.

2. Develop grazing systems to keep livestock off streambanks when they are most vulnerable to damage and to coincide with the physiological needs of important riparian plant species.

3. Limit grazing intensity to a level that will maintain the desired species composition and vigor.

4. Consider changing livestock species to obtain better animal distribution through herding.

5. Use vegetation and/or structures to stabilize and protect banks of streams or excavated channels against scour and erosion.

6. Regulate grazing at a proper rate of timing intensity that will maintain enough cover to protect the soil and maintain or improve the quantity and quality of desirable vegetation.

7. Resolve management conflicts through the development of grazing management plans.

8. Implement soil stabilization practices on rangelands to help reduce soil erosion and prevent sediments, organic debris, and applied chemicals and fertilizer from entering surface and groundwater. The best practices for stabilizing soils are the utilization of vegetation or artificial soil covers to reduce erosion.

9. Locate livestock water developments and salting away from riparian and wetland areas.

10. Consider fencing springs, seeps, and water developments to protect water quality and riparian ecosystems.

11. Ensure rest for plant growth and vigor during the critical growing period.

12. Monitor, evaluate, and adjust livestock management practices to meet resource objectives.

PESTICIDE AND HERBICIDE APPLICATION

1. Application of pesticides and herbicides on public lands will conform to BLM Manual H-9011-1 and 9015.

2. To prevent the entry of hazardous substances into surface waters:

a. Chemical treatments within the riparian area shall be by hand and shall be applied only to specific targets.

b. Leave a 25-foot buffer along surface waters when chemicals are being applied through ground application with power equipment.

c. For aerial application, leave at least a 50-foot buffer along live water and do not spray in the riparian area.

d. Always refer to chemical label instructions for additional guidance on use near water and required buffer zones.

3. To enhance effectiveness and prevent transport into streams, apply chemicals during appropriate weather conditions (generally calm and dry) and

during the optimum time for control of the target pest or weed.

PRESCRIBED BURNING

1. The annual location, frequency, objectives, and budgetary requirements for prescribed burning will be specified in an Integrated Activity Plan.

2. Prescribed burning will be conducted by a certified burn official within the parameters of an approved burn plan. An environmental assessment will be prepared for each prescribed burn.

3. Prescribed burn scheduling will be established by prioritizing resource objectives. Treatment priorities should be based on soil productivity and potential, desired plant community composition, and site preparation and treatment costs.

4. To protect soil productivity, burning will be conducted under conditions when a light burn can accomplish stated objectives.

a. Highly sensitive soils - Burn only in spring-like conditions when soil and duff are moist. Maximize retention of duff layer. Maintain 90 percent of woody debris equal to or greater than nine inches in diameter.

b. Moderately sensitive soils - Burn only in spring-like conditions when soil and duff are moist. Maximize retention of duff layer. Maintain 80 percent of woody debris equal to or greater than nine inches in diameter. Write burning prescriptions that reduce disturbance and duration and achieve low fire intensity.

c. Least sensitive soils - Write prescriptions for low and moderate intensity burns to protect most of the nutrient capital. Maximize retention of duff layer. Maintain 75 percent of woody debris equal to or greater than nine inches in diameter.

5. Do not burn piles of slash within 100 feet of riparian areas. If riparian areas are within or adjacent to the prescribed burn unit, piles will be firelined or scattered prior to burning.

6. When preparing the unit for burning, avoid piling concentrations of large logs and stumps; pile small material (3 to 8 inches in diameter). Piles should be burned when soil and duff moisture are high.

7. Burning will be conducted only within prescription. The prescription should provide an ignition design and sequence that will result in the desired burning intensity.

8. Test burns shall be conducted to ensure that the actual burn can be conducted within the prescribed atmospheric and site conditions necessary to achieve specified objectives.

MECHANICAL TREATMENTS

1. All projects affecting aquatic or riparian habitats would be reviewed by wildlife and fisheries biologists to reduce adverse impacts. A buffer strip along all perennial streams would be maintained in areas of vegetation manipulations.

2. No vegetation manipulation would be allowed within areas of intensive mineral activity where major surface disturbance, such as strip mining, may occur.

3. Vegetation manipulations would not be conducted on soils having high erosion susceptibility.

4. Areas proposed for vegetation manipulation would not be grazed by livestock until understory vegetation becomes well established and is able to support livestock grazing. A minimum of two complete growing seasons of rest from livestock grazing would be required to help ensure desirable vegetation regains vigor.

5. Vegetation manipulations would be irregular in shape, consisting of patches, strips, and fingers that maximize edge effect.

6. No point in a treated area would be greater than 200 yards from suitable cover unless a need is revealed through analysis by an interdisciplinary team.

7. Pinyon-juniper manipulations would be limited to 40-acre blocks unless the distance to cover stipulation is followed.

8. Adequate cover for wild horses would be ensured in wild horse areas, before initiating pinyon-juniper manipulation.

9. Snags, flat-topped or open-limbed conifers, and trees used intensively by cavity nesters, would be protected within vegetation manipulations. All snags would be preserved within a 1/2-mile radius of known active raptor nests.

10. Manipulation of sagebrush would be evaluated to determine impacts and necessary mitigation to ensure protection of sagebrush-dependent wildlife species. In general, no sagebrush within a 2-mile radius of a sage grouse strutting ground would be manipulated where the canopy cover is less than 40 percent.

11. Vegetation manipulations would not be conducted on any archaeological, cultural, paleontological, or significant recreational area.

12. Mechanical manipulations would be limited to slopes of 20 percent or less.

HAZARDOUS SUBSTANCES

1. Know and comply with regulations governing the storage, handling, application (including licensing of applicators), and disposal of hazardous substances.

2. Do not transport, handle, store, load, or dispose of any hazardous substance or fertilizer in such a manner as to pollute water supplies or waterways, or cause damage or injury to land, including humans, desirable plants and animals.

3. Do not store, mix, or rinse hazardous substances or fertilizers below the high-water mark or where they might enter state waters.

4. When the project might involve the use of hazardous substances, develop a contingency plan for spills, including cleanup procedures and notification of the state Water Quality Bureau.

PROTECTION OF WILDLIFE HABITAT

1. Vehicular access by the public on important wildlife habitats and/or during sensitive functional use periods (e.g., big game severe winter range, critical summer use areas, raptor nesting areas, sage grouse reproductive habitats) would be subject to restrictions as directed by the Area Manager. Use of restricted road segments by authorized personnel (e.g., BLM personnel, law enforcement, permitted land users) may be allowed for administrative and operational purposes. Methods used to restrict vehicular access may include: installing lockable gates, barricades or other forms of deterrents, signing, or reclaiming and abandoning roads or trails no longer necessary for management, or other methods prescribed by the Area Manager.

2. Surface disturbance and vegetation clearing associated with project construction should generally be located to avoid vegetative types in most limited supply, those less conducive to successful reclamation, or those representing greater site-specific value for wildlife, as determined during the NEPA process. Examples of these vegetative types are juniper stands in a predominant sagebrush type, sagebrush in a predominant woodland type, mature tree stands rather than younger growth, and woodlands with well developed understory rather than with barren understory.

3. Woodland treatments will be designed and located where possible to replicate natural patterns of forest succession and distribution. Efforts will be made to minimize community fragmentation, including structural and age class components. In general, no point within an opened stand will be more than 200 yards from equal or greater intervals of cover.

4. Snags, including dead or dying trees, will be retained within the interior of forest treatment areas at levels commensurate with stand composition. Leave trees will be designated by the Area biologist prior to treatment.

MANAGEMENT OF NOXIOUS WEEDS

1. An Integrated Weed Management (IWM) approach to the prevention, control or containment of noxious weeds and undesirable plant species will be implemented according to BLM Manual 9015--Integrated Weed Management (12/2/92).

2. All seed planted or sowed in BLM weed-free zones, for any purpose, shall be certified by a qualified federal, state or county officer as free of noxious weed seed.

3. All hay, straw, mulch or other vegetative material used in weed-free zones for site stability, rehabilitation or project facilitation shall be certified by a qualified federal, state or county officer as free of noxious weeds and noxious weed seed. Current state standards shall be applicable.

4. All baled feed, pelletized feed and grain transported onto BLM weed-free zones and used to feed livestock shall be certified as free of noxious weed seed by a qualified federal, state or county officer.

5. All contractors and land-use operators moving equipment into the White River Resource Area must clean their equipment prior to use on BLM lands. Equipment being moved within the resource area, from outside an established weed-free zone into that zone must be thoroughly cleaned prior to entering the weed-free zone. These requirements may be waived by the area manager.

6. All pest control proposals will include an environmental analysis developed within an Integrated Pest Management format. Selection of the preferred alternative shall depend upon environmentally sound and cost-effective criteria.

7. Monitoring of land-disturbing activities in weed-free zones will use permanent photo points to identify noxious weed growth stages, degree of infestation, and trends.

8. Application of herbicides must be under field supervision of an EPA-certified pesticide applicator. Herbicides must be registered by the EPA and application proposals must be approved by the BLM.

RECLAMATION

1. All disturbed sites shall be promptly reclaimed, according to an approved reclamation plan, to the satisfaction of the Authorized Officer.

2. Reclamation should be implemented concurrent with construction and site operations to the fullest extent possible. Final reclamation actions shall be completed within six months of the termination of operations and site abandonment unless otherwise approved in writing by the Authorized Officer.

3. The goal for rehabilitation of any disturbed area shall be the permanent restoration of original site conditions and productive capability.

4. The site shall be restored as nearly as possible to its original contour.

5. Push fill material into cuts and up over backslopes. Leave no depressions that will trap water or form ponds.

6. Distribute topsoil evenly over the location and prepare a seedbed by disking or ripping. Drill seed on contour at a depth no greater than 1/2 inch. In areas that cannot be drilled, broadcast at double the seeding rate and harrow seed into the soil.

7. Use seed that is certified and free of noxious weeds. Seed certification tags must be submitted to the Authorized Officer.

8. Additional vegetation or standard seed mixes (see Table A-1) may be required to accommodate specific site conditions.

9. The White River Resource Area has eight standard seed mixes for general use based on range site. When possible, select a native seed mix that is most suitable for the revegetating the project area (see Table A-2).

10. Leave the disturbed area in a condition that provides wanted drainage with no additional maintenance.

Table A-1. Standard Seed Mixes

Seed Mix #	Species (Variety)	Lbs. PLS per acre	Range Sites
1	Siberian wheatgrass (P27) Russian wildrye (Bozoisky) Crested wheatgrass (Hycrest) Alternates: Yellow sweetclover, Fourwing saltbush, Nutall saltbush, Winterfat, Annual Sunflower, Western wheatgrass	3 2 3	Alkaline Uplands, Badlands, Clayey 7"-9", Clayey Salt Desert, Cold Desert Breaks, Cold Desert Overflow, Gravelly 7"-9", Limey Cold Desert, Loamy 7"-9", Loamy Cold Desert, Loamy Salt Desert, Saline Lowland, Salt Desert Breaks, Salt Flats, Salt Meadow Sands 7"-9", Sandy 7"-9", Sandy Cold Desert, Sandy Salt Desert, Shale 7"-9", Shale/Sands Complex, Shallow Loamy, Shallow Sandy, Shallow Slopes, Silty Salt Desert, Silty Swale, Steep Slopes
2	Western wheatgrass (Arriba) Pubescent wheatgrass (Luna) Russian wildrye (Bozoisky) Crested wheatgrass (Fairway/Ephraim) Yellow sweetclover (Madrid) Fourwing saltbush (Wytana/Rincon) Alternates: Winterfat	3 2 2 2 0.5 2	Alkaline Slopes, Clayey Foothills, Clayey Slopes, Claypan, Mountain Shale
3	Pubescent wheatgrass (Luna) Western wheatgrass (Rosanna) Crested wheatgrass (Ephraim) Indian ricegrass (Nezpar) Orchardgrass (Paiute) Yellow sweetclover (Midrid) Alternates: Fourwing saltbush, Intermediate wheatgrass, Cicer Milkvetch (Monarch)	4 2 1 1 1 0.5	Deep Loam, Loamy 10"-14", Loamy Breaks, Loamy Slopes, Rolling Loam, Valley Bench
4	Western wheatgrass (Rosanna) Pubescent wheatgrass (Luna) Crested wheatgrass (Nordan) Orchardgrass (Paiute) Indian ricegrass (Nezpar) Fourwing saltbush (Wytana) Alternates: Alfalfa (Nomad or Ladak)	2 3 2 1 1 1	Gravelly 10"-14", Pinyon/Juniper Woodland, Stony Foothills, 147 (Mountain Mahogany)
5	Pubescent wheatgrass (Luna) Crested wheatgrass (Fairway) Western wheatgrass (Rosanna) Indian ricegrass (Nezpar) Alternates: Yellow sweetclover, Alfalfa (Nomad or Ladak), Fourwing saltbush	4 2 3 2	Sandy Bench, Sandy Foothills, Sand Hills
6	Basin wildrye (Magnar) Western wheatgrass (Rosanna) Pubescent wheatgrass (Luna) Orchardgrass (Paiute) Fourwing saltbush (Wytana) Alternates: Crested wheatgrass, Cicer milkvetch (Monarch), Yellow sweetclover	2 3 3 1 1	Foothill Swale, Sandy Swale, Swale Meadow

Table A-1 continued

Seed Mix #	Species (Variety)	Lbs. PLS per acre	Range Sites
7	Big bluegrass (Sherman) Intermediate wheatgrass (Greenar) Smooth brome (Manchar) Orchard grass (Latar) Cicer milkvetch (Monarch) Alternates: Small burnet, Pubescent wheatgrass, Mountain brome, Alfalfa (Nomad or Ladak)	2 4 3 1 0.5	Alpine Meadow, Alpine Slopes, Aspen Woodlands, Brushy Loam, Deep Clay Loam, Douglas-fir Woodland, Loamy Park, Mountain Loam, Mountain Meadows, Mountain Swale, Shallow Subalpine, Spruce-fir Woodland, Subalpine Loam
8	Smooth brome (Manchar) Pubescent wheatgrass (Luna) Crested wheatgrass (Nordan) Cicer milkvetch (Monarch) Alternates: Alfalfa, Russian wildrye (Vinall), Beardless wheatgrass (Whitmar)	3 3 2 1	Dry Exposure, Dry Mountain Loam, Limestone Hills, Rocky Loam, Stony Loam

Table A-2. Native Seed Mixes

Seed Mix #	Species (Variety)	Lbs. PLS per Acre	Range Sites
2	Western wheatgrass (Arriba) Streambank wheatgrass (Sodar) Thickspike wheatgrass (Critana) Fourwing saltbush (Wytana, Rincon) Alternates: Winterfat, shadscale, globemallow	3 2 2 2	Alkaline Slopes, Clayey Foothills, Clayey Slopes, Claypan, Mountain Shale
3	Western wheatgrass (Rosanna) Indian ricegrass (Nezpar) Bluebunch wheatgrass (Whitmar) Thickspike wheatgrass (Critana) Green needlegrass (Lodorm) Globemallow Alternates: Fourwing saltbush, Utah sweetvetch, balsamroot	2 1 2 2 1 0.5	Deep Loam, Loamy 10"-14", Loamy Breaks, Loamy Slopes, Rolling Loam, Valley Bench
4	Western wheatgrass (Rosanna) Bluebunch wheatgrass (Secar) Thickspike wheatgrass (Critana) Indian ricegrass (Nezpar) Fourwing saltbush (Wytana) Utah sweetvetch Alternates: Needle and thread, globemallow	2 2 2 1 1 1	Gravelly 10"-14", Pinyon/Juniper Woodland, Stony Foothills, 147 (Mountain Mahogany)

Seed Mix #	Species (Variety)	Lbs. PLS per Acre	Range Sites
5	Western wheatgrass (Rosanna) Needle and Thread Thickspike wheatgrass (Critana) Indian ricegrass (Nezpar) Sand dropseed Alternates: Fourwing saltbush	2 2 2 2 1	Sandy Bench, Sandy Foothills, Sand Hills
6	Basin Wildrye (Magnar) Western wheatgrass (Rosanna, Arriba) Bluebunch wheatgrass (Secar) Thickspike wheatgrass (Critana) Fourwing saltbush (Wytana) Alternatives: Utah sweetvetch, globemallow	2 3 1 2 1	Foothill Swale, Sandy Swale, Swale Meadow
7	Bluebunch wheatgrass (Secar) Slender wheatgrass (Primar) Big bluegrass (Sherman) Canby bluegrass (Canbar) Mountain brome (Bromar) Alternates: Blue flax[1/], Rocky Mountain penstemon[2/], balsamroot	2 2 1 1 2	Alpine Meadow, Alpine Slopes, Aspen Woodlands, Brushy Loam, Deep Clay Loam, Douglas-fir Woodland, Loamy Park, Mountain Loam, Mountain Meadows, Mountain Swale, Shallow Subalpine, Spruce-fir Woodland, Subalpine Loam
8	Thickspike wheatgrass (Critana) Slender wheatgrass (Primar) Beardless wheatgrass (Whitmar) Streambank wheatgrass (Sodor) Canby bluegrass (Canbar)	2 2 2 1 1	Dry Exposure, Dry Mountain Loam, Limestone Hills, Rocky Loam, Stony Loam

[1/] Appar
[2/] Bandera

APPENDIX B
SURFACE STIPULATIONS APPLICABLE TO ALL SURFACE-DISTURBING ACTIVITIES

This appendix lists, by alternative, surface stipulations referred to throughout this draft RMP and EIS. This appendix also lists locations where the surface stipulations would apply. Surface stipulations would be appended, where applicable, to land use authorizations, permits, and leases issued on BLM lands and on split-estate lands where a federal undertaking is involved. Private landowners wishes will be considered when placing stipulations on split-estate lands.

Surface stipulations in this appendix were developed through (1) the *White River Resource Area Umbrella Oil and Gas Environmental Assessment* (EA), (2) the *Colorado Oil and Gas Leasing and Development Environmental Impact Statement* (BLM 1991), and (3) this RMP EIS.

Surface stipulations developed through the umbrella oil and gas EA are presently appended only to oil and gas leases. These stipulations would continue to be appended to oil and gas leases under Alternative A. They also would be appended to land use authorizations other than oil and gas leases, where applicable, under Alternative A.

Surface stipulations developed through the *Colorado Oil and Gas Leasing and Development EIS* and this RMP would apply under Alternatives B, C, and D.

EXCEPTIONS, MODIFICATIONS, AND WAIVERS

Surface stipulations could be excepted, modified, or waived by the area manager. An exception exempts the holder of the land use authorization document from the stipulation on a one-time basis. A modification changes the language or provisions of a surface stipulation, either temporarily or permanently. A waiver permanently exempts the surface stipulation.

The environmental analysis document prepared for oil and gas development (i.e., APDs, sundry notices) also would need to address proposals to exempt, modify, or waive a surface stipulation. To exempt, modify, or waive a stipulation, the environmental analysis document would have to show that (1) the circumstances or relative resource values in the area had changed following issuance of the lease, (2) less restrictive requirements could be developed to protect the resource of concern, and (3) operations could be conducted without causing unacceptable impacts. The environmental analysis document would also need to determine the need for an RMP amendment.

The public would be notified of any RMP amendments being considered and would be given 30 days in which to review and comment on the proposed amendment. The BLM would make a decision regarding the amendment following the 30-day comment period.

DESCRIPTION OF SURFACE STIPULATIONS

Three surface stipulations could be applied to land use authorizations in the White River Resource Area: (1) no surface occupancy (NSO), (2) timing limitation (TL), and (3) controlled surface use (CSU).

Table B-1 lists no surface occupancy (NSO) stipulations. Areas identified as NSO would be closed to placement of surface facilities such as an oil and gas well. NSO areas would be open to locatable minerals (unless closed by a withdrawal) but subject to surface stipulations listed in this appendix. NSO areas would be avoidance areas for location of public utilities and closed to new road construction.

Table B-2 lists timing limitation (TL) stipulations. Areas identified for TL stipulations would be closed to developmental activities and associated vehicle travel on BLM-administered roads and trails during the times indicated in the table. TL stipulation areas would be open to operational and maintenance activities, including associated vehicle travel, during the closed period unless otherwise specified in the stipulation.

Table B-3 lists controlled surface use (CSU) stipulations. Areas identified as CSU would require proposals be authorized only according to the controls or constraints specified. Controls would be applicable to all surface use activities such as oil and gas development and operation,

mineral material sales, and public utility location. CSU areas would be open to public utilities.

LEASING NOTICES

Table B-4 lists leasing notices (LN). Leasing notices are applicable primarily to leases but they also may be appended to other surface-disturbing land use authorizations. An LN provides more detailed information about limitations applicable under existing law, lease terms, regulations, or operational orders. An LN also addresses special items that an operator, lessee, or permittee would need to consider when planning operations.

APPLICATION OF SURFACE STIPULATIONS AND NOTICES

A stipulation code has been assigned to each surface stipulation and lease notice listed in this appendix. A stipulation description has been included for each stipulation code. In several places, two stipulation codes exist for the same stipulation. The first code is the White River Resource Area stipulation code. The second code (in parenthesis) is a cross reference to an existing Colorado State Office (CSO) stipulation.

The CSO codes were developed in the Colorado Oil and Gas Leasing and Development EIS. The CSO stipulation codes and descriptions are presently stored in a computer data base in the CSO. They are used in leasing BLM and split-estate lands for oil and gas. CSO personnel place these stipulations on oil and gas leases where applicable. New stipulations (codes and descriptions) developed through this RMP, which are applicable to oil and gas leasing, also will be entered in the CSO computer data base and appended to oil and gas leases, where applicable.

All stipulations (codes and descriptions) in this appendix also will be placed in a computer data base in the White River Resource Area for use in issuing land use authorizations other than oil and gas. White River Resource Area personnel will use this data base to append applicable surface stipulations to land use authorizations other than oil and gas leases.

Table B-1. No Surface Occupancy Stipulations

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-01	Landslide areas- Baxter Pass and Douglas Pass Areas	applicable soil units	7,600	N/A	N/A	7,600	**Landslide Areas**: These soils are considered unstable and subject to slumping and mass movement. Surface occupancy will not be allowed in such areas delineated from SCS Order III Soil Surveys. **Exception**: The area manager may authorize surface occupancy in the NSO area if an environmental assessment finds the nature of the proposed action could be conditioned so as not to impair the stability of the landslide areas. An exception also may be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, finds the soil properties associated with the proposed action are not susceptible to slumping and mass wasting. **Modification**: Site specific modifications to the NSO may be granted by the area manager pending determination that a portion or certain portions of the soil units meet the following conditions: 1. Inclusions where slopes are less than 35 percent, susceptibility to accelerated erosion and mass movement are generally much less on less sloping areas. 2. If the operator surveys the area, delineates wet areas and sloping rock formations and can show through an environmental assessment, the proposed action will avoid these areas. 3. If the operator uses land treatments or other best management practices in critical erosion areas where a high probability of reducing soil loss and degradation of water quality will be achieved. 4. If the operator can show through engineering and design, the proposed action would not to cause slumping or mass movement. A modification also may be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, decides the soil properties associated with the proposed action are not susceptible to slumping and mass wasting. **Waiver**: None.
NSO-02 (CO-26)	Landslide areas - other	applicable soil units	N/A	N/A	28,110	28,110	See NSO-01 above

Table B-1 Continued

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-03 (CO-27)	Fragile soils	applicable soil units	N/A	N/A	79,300	N/A	**Fragile Soils**. These are soils rated highly or severely erodible by wind or water. Surface occupancy will not be permitted in such areas delineated from SCS Order III soil surveys. **Exception**: Surface occupancy in the NSO area may be authorized if after environment analysis the area manager decides the nature or conduct of the proposed action could be conditioned so as not to cause unacceptable impacts to the soils in and around the disturbed area. An exception may also be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, finds that soils properties associated with the proposed action do not meet fragile soil criteria. **Modification**: The area manager may approve surface disturbing activities in the NSO only after an engineering/reclamation plan is submitted by the operator. Such plans must show how the following will be accomplished: 1. Site productivity will be restored. 2. Surface runoff will be controlled to adequately protect off-site areas from accelerated erosion such as rilling, gullying, piping, and mass wasting. 3. Surface-disturbing activities will not be conducted during extended wet periods. 4. Construction will not be allowed when soils are frozen. Modifications also may be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, finds that soil properties associated with the proposed action do not meet fragile soil criteria. **Waiver**: None.
NSO-04	Raptor nests - T/E species	160 acres around nests	0				**T/E Raptors**. This area encompasses the nests of raptor species listed or proposed for listing under the *Endangered Species Act*. Surface occupancy is not allowed within 160-acre parcels delineated around each identified nest site. **Exception**: None developed.[1/] **Modification**: None developed. **Waiver**: None developed.

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-05	Raptor nests - special status (candidate T/E species)	40 acres around nests	3,200	N/A	N/A	N/A	**Special Status Raptors**. This area encompasses the nests of raptors candidate for listing under the *Endangered Species Act*. Surface occupancy is not allowed within 40-acre parcels delineated around identified nest sites. **Exception**: None developed.[1/] **Modification**: None developed. **Waiver**: None developed.
NSO-06	Raptor nests - other than T/E and special status species	10 acres around nests	5,320	N/A	N/A	N/A	**Other Raptors**. This area encompasses raptor nests of other than threatened, endangered, or special status species. Surface occupancy is not allowed within 10-acre parcels delineated around identified nest sites. **Exception**: None developed. [1/] **Modification**: None developed. **Waiver**: None developed.
NSO-07 (CO-04 and CO-05 in part)	Raptor nests - T/E and candidate T/E species	1/4 mile buffer around nests	N/A	10,350	N/A	N/A	**Special Status Raptors**. This area encompasses the nests of special status raptors, including listed or proposed threatened and endangered species, and those species candidate for listing under the *Endangered Species Act*. Surface occupancy is not allowed within 1/4 mile of the identified nests. **Exception**: Except for bald eagle nest sites, for which there are no exceptions, the NSO area may be altered depending on the active status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **Modification**: None developed.[1/] **Waiver**: None developed.

Table B-1 Continued

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-08 (CO-04 revised in part and CO-05 revised)	Raptor nests - T/E and candidate T/E species	1/4 mile buffer around nests	N/A	N/A	10,350	10,350	**Special Status Raptors**. This area encompasses the nests of special status raptors, including listed or proposed threatened and endangered species, and those species candidate for listing under the *Endangered Species Act*. Surface occupancy is not allowed within 1/4 mile of the identified nests. **Exception**: An exception may be granted by the area manager if authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act, Eagle Protection Act*, or *Migratory Bird Treaty Act*) to harass, harm, pursue, wound or kill in the context of active nesting attempts and/or short or long-term adverse modification of suitable nest site characteristics. An exception may also be granted by the area manager is it is determined that the nature of conduct of proposed or conditioned activity would not impair the function or utility of the nest site for current or subsequent nest activities or occupancy. **Modification**: Site-specific modifications to the NSO area may be granted by the area manager pending determination that a portion or certain portions of the NSO area are not essential to nest site function or utility or that the nature or conduct of the activity as proposed or conditioned would not impair the function or utility of the nest site for current or subsequent nest activities or occupancy. If a species status is downgraded or a species is delisted, the NSO buffer area may be modified to an appropriate level. **Waiver**: A waiver may be granted if the species becomes extinct or if site conditions change such that there is no reasonable likelihood of occupation for a subsequent minimum of 10 years.
NSO-09 (CO-03)	Raptor nests - other than threatened, endangered, candidate, special status	1/8 mile buffer around nests	N/A	20,900	N/A	N/A	**Other Raptors**. This area encompasses raptor nests of other than threatened, endangered, or special status species. Surface occupancy is not allowed within 1/8 mile of identified nests. **Exception**: The NSO area may be altered depending on the active status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **Modification**: None developed. [1/] **Waiver**: None developed

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-10 (CO-03)	Raptor nests - other than threatened, endangered, candidate, special status	1/8 mile buffer around nests	N/A	N/A	20,900	20,900	**Other Raptors**. This area encompasses raptor nests of other than threatened, endangered, or special status species. Surface occupancy is not allowed within 1/8 mile of identified nests. **Exception**: An exception may be granted by the area manager if authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act, Eagle Protection Act*, or *Migratory Bird Treaty Act*) to harass, harm, pursue, wound or kill in the context of active nesting attempts and/or short or long-term adverse modification of suitable nest site characteristics. The area manager may also grant an exception if an environmental assessment finds that the nature or conduct of the action as proposed or conditioned would not impair the function or utility of the nest site for current or subsequent nest activities or occupancy. **Modification**: Site-specific modifications to the NSO area may be granted by the area manager pending determination that a portion or certain portions of the NSO area are not essential to nest site function or utility or that the nature or conduct of the activity as proposed or conditioned would not impair the function or utility of the nest site for current or subsequent nest activities or occupancy. **Waiver**: A waiver may be granted if documentation shows the nest site has been abandoned for a minimum of 3 years, or that site conditions (including surrounding nest habitat) have changed such that there is no reasonable likelihood of site occupation for a subsequent minimum of 10 years.
NSO-11	Sage grouse leks	10-40 acres/lek	330	N/A	N/A	N/A	**Sage Grouse Leks**. This area encompasses sage grouse leks. Surface occupancy is not allowed within 10 to 40 acre parcels delineated around identified lek sites. **Exception**: None developed. [1/] **Modification**: None developed. **Waiver**: None developed.

Table B-1 Continued

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-12 (CO-02)	Sage grouse leks	¼ mile buffer around lek	N/A	5,490	N/A	N/A	**Sage Grouse Leks**. This area encompasses sage grouse leks. Surface occupancy is not allowed within 1/4 mile of identified lek sites. **Exception**: The NSO area may be altered depending upon the active status of the lek or the geographical relationship of topographical barriers and vegetation screening to the lek site. **Modification**: None developed.[1/] **Waiver**: None developed.
NSO-13 (CO-02 revised)	Sage grouse leks	1/4 mile buffer around lek	N/A	N/A	5,490	5,490	**Sage Grouse Leks**. This area encompasses sage grouse leks. Surface occupancy is not allowed within 1/4 mile of identified lek sites. **Exception**: An exception may be granted by the area manager if an EA finds that the action, as proposed or conditioned, would not impair the function or utility of the site for current or subsequent reproductive display, including daytime loafing/staging activities. **Modification**: The NSO area may be modified in extent or substituted with a timing limitation (e.g., Mar 1 to May 15) by the area manager if an EA finds a portion of the NSO area nonessential to site utility or function or that the proposed action could be conditioned so as not to impair the function or utility of the site for current or subsequent reproductive display, including daytime loafing/staging activities. **Waiver**: The stipulation may be waived if, in cooperation with the Colorado Division of Wildlife, it is determined that the site has been permanently abandoned or unoccupied for a minimum of 5 years and site conditions have changed such that there is no reasonable likelihood of site occupation for a minimum of 10-year period.
NSO-14	Important wildlife watering areas	⅛ mile buffer	810	N/A	N/A	N/A	**Wildlife Watering Source**. This area is an important wildlife watering source. Surface occupancy is not allowed within 1/8 mile of identified water features. **Exception**: None developed.[1/] **Modification**: None developed. **Waiver**: None developed.

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-15 (CO-04 in part)	Bald eagle roost/concentration area	¼ mile buffer around roost/concentration area	N/A	830	N/A	N/A	**Bald Eagle Roosts**. This area encompasses bald eagle nocturnal roosts and/or concentrated use areas. Surface disturbance is not allowed within 1/4 mile of designated features. **Exception**: The NSO applies to the essential features of the winter roost site complex. The NSO area may be altered depending on the active status of the roost or the geographical relationship of topographic barriers and vegetation screening. **Modification**: None developed **Waiver**: None developed.
NSO-16 (CO-04 revised in part)	Bald eagle roost/concentration area	1/4 mile buffer around roost/concentration area	N/A	N/A	830	830	**Bald Eagle Roosts**. This area encompasses bald eagle nocturnal roosts and/or concentrated use areas. Surface disturbance is not allowed within 1/4 mile of designated features. **Exception**: An exception may be granted by the area manager if authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act* and *Eagle Protection Act*) to harass, harm, pursue, wound or kill in the context of ongoing roosting activities and/or short or long-term adverse modification of suitable roost site characteristics. The area manager may also grant an exception if an EA finds that the nature or conduct of the action as proposed or conditioned would not impair the function or utility of the site for current or subsequent roosting activities or occupancy. **Modification**: The NSO area may be modified by the area manager if an EA finds a portion of the NSO is nonessential to roost site function or utility or that the proposed action could be conditioned to not impair the function or utility of the site for current or subsequent roosting activities or occupancy. The size of the NSO buffer may be reduced if the bald eagle population status is downgraded or the species is delisted. **Waiver**: The stipulation may be waived if the species becomes extinct or if the site has failed to support roosting activities over a minimum 3-year period or has changed such that there is no reasonable likelihood of site occupation for a subsequent minimum 10-year-period.

Table B-1 Continued

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-17	Colorado River Cutthroat Trout Habitat	drainage and adjacent slopes greater than 30 percent	4,560	N/A	N/A	N/A	**Colorado River Cutthroat Trout**. The Lake and Soldier Creek drainages support remnant populations of Colorado River cutthroat trout that are candidate for listing under the *Endangered Species Act*. Surface occupancy is not allowed on the valley floors and adjacent slopes exceeding 30 percent in these drainages. **Exception**: None developed.[1/] **Modification**: None developed. **Waiver**: None developed.
NSO-18	Active beaver colonies	300 foot buffer around colonies	800	N/A	N/A	N/A	**Beaver Colonies**. This area contains active beaver colonies. Surface occupancy is not allowed within 300 feet of the colony. **Exception**: None developed.[1/] **Modification**: None developed. **Waiver**: None developed.
NSO-19	Designated ACECs - Dudley Bluffs (1,630 acres), Yanks Gulch/Upper Greasewood Creek (2,680 acres)	entire ACEC	N/A See CSU-05 [2/]	N/A See CSU-05 [2/]	4,310	N/A See CSU-05 [2/]	**ACECs**. This ACEC possesses plant species that are candidate for listing as T/E, sensitive plants, cultural resources, paleontological resources, fragile soils, RVAs, or combinations of the above. Surface occupancy is not allowed within the ACEC to protect one or all of the sensitive resources. Existing county roads, powerlines, and pipelines within the ACEC are allowed to remain; however, the ACEC is an avoidance (or exclusion area - see Public Utilities Section, Chap. 2) for future public utilities, closed to construction of new roads and trails, and closed to mineral materials disposal and other surface-disturbing activities. Motorized vehicle travel would be allowed only on designated roads and trails. Off-road travel would be prohibited. **Exception**: An on-the-ground survey will be conducted on previously-unsurveyed land within the ACEC. Plant locations and habitat of sensitive plants and remnant vegetation associations will be mapped. This stipulation may be excepted by the area manager in areas outside the mapped area if an environmental assessment finds the plants for which the ACECs are being proposed would no be affected. **Modification**: None **Waiver**: None

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-20	Designated ACECs - Raven Ridge (2,090 acres), South Cathedral Bluffs (320 acres)	entire ACEC	N/A See CSU-05	2,410	2,410	2,410	See NSO-19
NSO-21	Proposed ACECs - Ryan Gulch	entire ACEC	N/A	N/A	1,440	N/A	See NSO-19
NSO-22	Proposed ACECs - Raven Ridge Addition (2,890 acres), South Cathedral Bluffs Addition, Black Gulch (1,810 acres), Coal Draw (1,840 acres), Moosehead (8,940 acres)[3/]	entire ACEC	N/A	N/A	15,480	15,480	See NSO-19
NSO-23	Duck Creek Wickiup Site	wickiup village	3 acres	3 acres	3 acres	3 acres	**Duck Creek Wickiup Site within the Duck Creek Proposed ACEC - Cultural Resources**. This site, which is within the Duck Creek Proposed ACEC, is listed on the *National Register of Historic Places*. Surface occupancy is not allowed within the wickiup site. This stipulation applies to all surface-disturbing activities including oil and gas. **Exception**: None **Waiver**: None
NSO-24	*Known* habitat of listed T/E plants and candidate T/E plants	existing and future mapped sites	1,440	N/A	N/A	N/A	**Known Habitat of Listed T/E and Candidate T/E Plants**. This area contains known habitat of T/E plants and candidate T/E plants. An on-the-ground survey will be conducted prior to authorizing any surface-disturbing activities in this area. Known and potential habitats will be mapped. Surface occupancy will not be allowed within mapped areas occupied by T/E plants. **Exception**: None **Modification**: None **Waiver**: None

Table B-1 Continued

Stip Code	Location or Resource of Concern	Applicable NSO Area	Alternative				Stipulation Code Description
			A	B	C	D	
NSO-25 (CO-08)	*Known and potential* habitat of listed T/E plants and candidate T/E plants	existing and future mapped sites	N/A	46,840	46,840	46,840	**Known and Potential Habitat of Listed T/E and Candidate T/E Plants**. This area contains T/E plants, candidate T/E plants, or potential habitat. An on-the-ground survey will be conducted prior to authorizing any surface-disturbing activities in this area. Known and potential habitats will be mapped. Surface occupancy will not be allowed within mapped areas occupied by T/E plants. **Exception**: None **Modification**: None **Waiver**: None
NSO-26	BLM sensitive plants, remnant vegetation associations	existing and future mapped sites	4,520	4,520	4,520	4,520	**Sensitive Plants and Remnant Vegetation Associations**. This area contains BLM sensitive plants or remnant vegetation associations. An on-the-ground survey will be conducted prior to authorizing any surface-disturbing activities in this area. Plants will be mapped. Surface occupancy will not be allowed within mapped plant locations. **Exception**: If the no surface occupancy stipulation would hinder or preclude the exercise of valid existing rights, protection would be applied through conditions of approval (see Appendix B) that would require reclamation of disturbed areas with native species occurring within a RVA or by reproducing sensitive species on their disturbed habitat. **Modification**: None **Waiver**: None
NSO-27	Oak Ridge State Wildlife Area	federal estate within state wildlife area	N/A	N/A	9,300[4/]	9,300	**Oak Ridge State Wildlife Area**. This area involves federal lands within the perimeter of the Oak Ridge State Wildlife Area. Surface occupancy is not allowed within the designated areas. **Exception**: The area manager may grant an exception, in consultation with the Colorado Division of Wildlife, if an EA finds the proposed action could be conditioned to be compatible with or beneficial to wildlife values or public uses associated with the state wildlife area. **Modification**: None **Waiver**: None

Table B-2. Timing Limitation Stipulation Areas

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-01 (similar to CO-22 and CO-24)	Raptor nesting sites (T/E and candidate T/E species)	1/2 mile buffer around nests	Feb 1 - Jul 31 or until fledging	1,510	N/A	N/A	N/A	**Listed, Proposed, or Candidate T/E Raptors**. This area encompasses the nests of threatened, endangered, or candidate raptors. No development activities are allowed within 1/2 mile of identified nest sites from February 1 to July 31 or until fledging. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.
TL-02 (CO-24 revised)	Raptor nesting sites (T/E and candidate T/E species except bald eagles and ferruginous hawks)	1/2 mile buffer around nest sites	Feb 1 to Aug 15 or until fledging and dispersal	N/A	N/A	1,510	1,510	**Listed, Proposed, or Candidate T/E Raptors Other than Bald Eagles and Ferruginous Hawks**. This area encompasses the nests of threatened, endangered, or candidate raptors other than bald eagle and ferruginous hawk. No development activities are allowed within 1/2 mile of identified nest sites from February 1 to August 15 or until fledging and dispersal. **Exception**: An exception may be granted by the area manager if authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act, Eagle Protection Act* or *Migratory Bird Treaty Act*) to harass, harm, pursue, wound or kill in the context of active nesting attempts. The area manager may also grant an exception if an EA finds the nature or conduct of the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager may also grant an exception if the nest site is unattended (e.g. as a nest complex alternate) or remains unoccupied by May 15 of the project year. **Modification**: The area manager may modify the size of the area if an EA finds that a portion of the TL area is nonessential to nest site utility or function or that the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager also may modify the stipulation timeframes if the nest fails or the young fledge and disperse from the nest site prior to August 15. If a species status is downgraded or a species is delisted, the size of the TL may be reduced. **Waiver**: A waiver may be granted if the species becomes extinct or there is no reasonable likelihood of site occupation over a minimum 10-year period.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-03 (similar to CO-18)	Raptor nesting sites (other than T/E and candidate T/E species)	1/4 mile around nest sites	Mar 1 to Jul 31 or until fledging	72,680	N/A	N/A	N/A	**Other Raptors**. This area encompasses the nests of raptors other than threatened, endangered, or candidate species. No development activities are allowed within 1/4 mile of identified nest sites from March 1 to July 31 or until fledging. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.
TL-04 (CO-18)	Raptor nesting sites (other than T/E and candidate T/E species)	1/4 mile around nest sites	Feb 1 to Aug 15	N/A	72,680	N/A	N/A	**Other Raptors**. This area encompasses the nests of raptors other than those listed or proposed under the *Endangered Species Act*. No development activities are allowed within 1/4 mile of identified nest sites from February 1 to August 15. **Exception**: During years when a nest site is unoccupied or unoccupied by or after May 15, the seasonal limitation may be suspended. It may also be suspended once the young have fledged and dispersed from the nest. **Modification**: None developed. **Waiver**: None developed.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-05 (CO-18 revised)	Raptor nesting sites (other than T/E and candidate T/E species)	1/4 mile around nest sites	Feb 1 to Aug 15 or until fledging and dispersal	N/A	N/A	72,680	72,680	**Other Raptors**. This area encompasses the nests of raptors other than threatened, endangered, or candidate species. No development activities are allowed within 1/4 mile of identified nest sites from February 1 to August 15 or until fledging and dispersal. **Exception**: An exception may be granted by the area manager is authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act, Eagle Protection Act* or *Migratory Bird Treaty Act*) to harass, harm, pursue, wound or kill in the context of active nesting attempts. The area manager may also grant an exception if an EA finds the nature or conduct of the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager may also grant an exception if the nest site is unattended (e.g. as a nest complex alternate) or remains unoccupied by May 15 of the project year. **Modification**: The area manager may modify the size of the area if an EA finds that a portion of the TL area is nonessential to nest site utility or function or that the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager also may modify the date of the stipulation if nest fails or the young fledge and disperse from the nest site prior to August 15. If a species status is downgraded or a species is delisted, the size of the TL may be reduced. **Waiver**: A waiver may be granted if the site has remained unoccupied for a minimum 3-year period or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.
TL-06 (similar to CO-19)	Raptor nests (ferruginous hawks)	1/2 mile around nest sites	Feb 1 - Aug 15	18,470	N/A	N/A	N/A	**Ferruginous Hawks**. This area encompasses the nests of ferruginous hawk--candidates for listing under the *Endangered Species Act*. No development is allowed within 1/2 mile of identified nest sites from February 1 to August 15 or until fledging. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-07 (similar to CO-19)	Raptor nests (ferruginous hawks)	1 mile around nest sites	Feb 1 - Aug 15	N/A	73,880	N/A	N/A	**Ferruginous Hawks**. This area encompasses the nests of ferruginous hawk--candidates for listing under the *Endangered Species Act*. No development is allowed within 1 mile of identified nest sites from February 1 to August 15. **Exception**: During years when a nest site is unoccupied or unoccupied by or after May 15, the seasonal limitation may be suspended. It may also be suspended once the young have fledged and dispersed from the nest. **Modification**: None developed. **Waiver**: None developed.
TL-08 (similar to CO-19)	Raptor nests (ferruginous hawks)	1 mile around nest sites	Feb 1 to Aug 15 or until fledging and dispersal	N/A	N/A	73,880	73,880	**Ferruginous Hawks**. This area encompasses the nests of ferruginous hawk--candidates for listing under the *Endangered Species Act*. No development is allowed within 1 mile of identified nest sites from February 1 to August 15 or until fledging and dispersal. **Exception**: An exception may be granted by the area manager is authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act, Eagle Protection Act* or *Migratory Bird Treaty Act*) to harass, harm, pursue, wound or kill in the context of active nesting attempts. The area manager may also grant an exception if an EA finds the nature or conduct of the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager may also grant an exception if the nest site is unattended (e.g. as a nest complex alternate) or remains unoccupied by May 15 of the project year. **Modification**: The area manager may modify the size of the area if an EA finds that a portion of the TL area is nonessential to nest site utility or function or that the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager also may modify the date of the stipulation if nest fails or the young fledge and disperse from the nest site prior to August 15. If a species status is downgraded or a species is delisted, the size of the TL may be reduced. **Waiver**: A waiver may be granted if the site has remained unoccupied for a minimum 3-year period or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-09 (similar to CO-23)	Bald eagle winter roost substrate on White River	¼ mile from river's margin	Nov 15 - Apr 15	11,680	N/A	N/A	N/A	**Bald Eagle Winter Perch and Roost Substrate along White River**. This area encompasses bald eagle winter perch and roost substrate (cottonwood trees) along the White River. No development is allowed within 1/4 mile of the river's margin from November 15 to April 15. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.
TL-10 (CO-22)	Bald eagle nests	1/2 mile around nest sites	Dec 15 - Jun 15	N/A	250	N/A	N/A	**Bald Eagle Nests**. This area encompasses bald eagle nests. No development is allowed within 1/2 mile of identified sites from December 15 to June 15. **Exception**: During years when a nest site is unoccupied by or after May 15, the timing limitation may be suspended. It may also be suspended once the young have fledged and dispersed from the nest. **Modification**: None. **Waiver**: None.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-11 (CO-22 revised)	Bald eagle nests	1/2 mile around nest sites	Dec 15 - Jul 15 or until fledging and dispersal	N/A	N/A	250	250	**Bald Eagle Nests**. This area encompasses bald eagle nests. No development is allowed within 1/2 mile of identified sites from December 15 to July 15 or until fledging and dispersal of young. **Exception**: An exception may be granted by the area manager if authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act, Eagle Protection Act* or *Migratory Bird Treaty Act*) to harass, harm, pursue, wound or kill in the context of active nesting attempts. The area manager may also grant an exception if an EA finds the nature or conduct of the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager may also grant an exception if the nest site is unattended (e.g. as a nest complex alternate) or remains unoccupied by May 15 of the project year. **Modification**: The area manager may modify the size of the area if an EA finds that a portion of the TL area is nonessential to nest site utility or function or that the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupancy. The area manager also may modify the date of the stipulation if nest fails or the young fledge and disperse from the nest site prior to August 15. If a species status is downgraded or a species is delisted, the size of the TL may be reduced. **Waiver**: A waiver may be granted if the site has remained unoccupied for a minimum 3-year period or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.
TL-12 (CO-23)	Bald eagle roost or concentration areas	1/2 mile around identified sites	Nov 15 - Apr 15	N/A	4,590	N/A	N/A	**Bald Eagle Winter Roosts and Concentration Areas**. This area encompasses bald eagle winter roosts and concentration areas. No development is allowed within 1/2 mile of identified sites from November 15 to April 15. **Exception**: If there is partial or complete visual screening of the area of activity, the primary zone around the roost site may be reduced to one-quarter mile. **Modification**: None. **Waiver**: None.

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-13 (CO-23 revised)	Bald eagle roost or concentration areas	1/2 mile around identified sites	Nov 15-Apr 15	N/A	N/A	4,590	4,590	**Bald Eagle Winter Roosts and Concentration Areas**. This area encompasses bald eagle winter roosts and concentration areas. No development is allowed within 1/2 mile of identified sites from November 15 to April 15. **Exception**: An exception may be granted by the area manager if authorization is obtained from the USFWS (through applicable provisions of the *Endangered Species Act* and *Eagle Protection Act)* to harass, harm, pursue, wound or kill in the context of ongoing roosting activities and/or short or long-term adverse modification of suitable roost site characteristics. The area manager may also grant an exception if an EA finds that the nature or conduct of the proposed action could be conditioned so as not to impair the function or utility of the site for current or subsequent roosting activities or occupancy. An exception may also be granted if forms of compensation are satisfactorily negotiated (through Section 7 Consultation) which fully offset losses associated with project implementation. **Modification**: The area manager may modify the size of the area or stipulation timeframes if an EA finds that a portion of the TL area is nonessential to roost site function or utility or that the proposed action could be conditioned so as not to impair the utility of the roost site for current or subsequent roosting activities or occupancy. **Waiver**: A waiver may be granted if the species has become extinct or if the site has failed to support roosting activities over a minimum 3-year period or if site conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.
TL-14	Sage grouse leks	1/4 mile around identified leks	Mar 1 - May 15	5,490	N/A	N/A	N/A	**Sage Grouse Leks**. These areas encompass sage grouse leks. No development activity is allowed within 1/4 mile from March 1 to May 15. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-15	Sage grouse crucial winter habitat	mapped area	Dec 16-Mar 15	N/A	0	0	0	**Sage Grouse Winter Concentration Areas**. Encompasses sagebrush habitats that are consistently occupied by large wintering concentrations of grouse or areas representing the only habitats that remain available for use during periods of heavy snowpack. Although sites in Coal/lower Wolf Creeks, Crooked Wash/Open Gulch, and Blair Mesa appear to fulfill these functions, the feature has not yet been delineated by Colorado Division of Wildlife. **Exception**: The area manager may grant an exception if an EA finds that the proposed action could be conditioned so as not to impair the function or utility of the site for current or subsequent winter use activity. **Modification**: The TL area or stipulation timeframes may be modified by the area manager if an EA finds a portion of the TL buffer area to be nonessential to site utility or function or that the proposed action could be conditioned so as not to impair the function or utility of the site for current or subsequent winter use activity. **Waiver**: The stipulation may be waived if, in cooperation with the Colorado Division of Wildlife, it is determined that the site is no longer suitable or selected for winter use activities and site conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.
TL-16	Sage grouse nest habitat/lek complex	within 2 miles of lek	Apr 15 - Jul 7	N/A	N/A	152,510	152,510	**Sage Grouse Nesting Habitat**. This area is presumed to encompass most suitable sage grouse nesting habitat associated with an individual lek. Development activity is allowed within these areas until direct and indirect impacts to suitable nesting cover exceeds 10 percent of that available within 2 miles of an associated lek. Further development activity within such areas would not be allowed from April 15 to July 7.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-16 cont.								**TL-16 continued. Exception**: The area manager may grant an exception of this stipulation if an EA, which incorporates Colorado Division of Wildlife consultation, finds that the proposed action could be conditioned so as not to adversely affect nest attendance, egg/chick survival, or nesting success. An exception may also be granted if the operator, BLM, and CDOW negotiate compensation that would satisfactorily offset anticipated losses of nesting habitat or nesting activities.Actions specifically designed to enhance the long-term utility or availability of suitable nest habitat may also be excepted. **Modification**: The area manager may modify the size of the TL area if an EA finds that the proposed action could be conditioned so as not to affect nest attendance, egg/chick survival, or nesting success. Stipulation timeframes also could be modified if operations could be conditioned to allow a minimum 70 percent of nesting attempts to progress through hatch. **Waiver**: This stipulation could be waived if CDOW determines that the described lands are incapable of serving long term requirements as sage grouse nesting habitat and that these ranges no longer warrant consideration as components of sage grouse nesting habitat.
TL-17 (CO-10)	Deer/elk production areas	mapped production areas	May 15 - Jun 30	2,360	N/A	N/A	N/A	**Deer and Elk Production Areas**. This area encompasses deer and elk production areas. No development is allowed within mapped deer and elk production areas from May 15 to June 30. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.
TL-18 (similar to CO-10)	Elk production areas	critical habitat only	Apr 16 - Jun 30	N/A	12,690	N/A	N/A	**Elk Production Area**. This area encompasses an elk production area--a habitat component considered critical to herd maintenance in this Data Analysis Unit. No development is allowed within these critical habitats from May 15 to June 30.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-18 cont.								**TL-18 continued. Exception**: The area manager may grant exceptions to this stipulation if an EA finds that the proposed actions would not interfere with critical habitat function or compromise animal condition within the project vicinity. **Modification**: None. **Waiver**: None.
TL-19 (CO-10 revised)	Elk production areas	mapped production areas	Apr 16 - Jun 30	N/A	N/A	12,690	12,690	**Elk Production Area**. This area encompasses an elk production area. No development is allowed within mapped elk production areas from May 15 to June 30. **Exception**: The area manager may grant an exception if an EA finds that the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition within the project vicinity (e.g. evoke adverse alterations in animal distribution or add unacceptably to the energetic or nutritional demands of elk during parturition or early calve-rearing periods). An exception may also be granted if the operator, BLM, and CDOW negotiate compensation that would satisfactorily offset anticipated impacts to elk production or habitat condition. Exceptions may also be granted for actions specifically intended to enhance the long term utility or availability of suitable habitat. **Modification**: The area manager may modify the size and timeframes of the timing limitation if CDOW monitoring information indicates that current animal use patterns are inconsistent with dates established for animal occupation of the project area. Modifications may also be authorized if the proposed action could be conditioned so as not to interfere with critical habitat function or compromise animal condition (e.g. adversely alter animal distribution or add unacceptably to the energetic or nutritional demands of elk during parturition or early calve-rearing periods). The stipulation may also be modified if the operator, BLM and CDOW agree to compensation that satisfactorily offset detrimental impacts to elk production or habitat condition. **Waiver**: This stipulation may be waived if the CDOW determines that all or specific portions of the lease area no longer satisfy this functional capacity.

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-20	Deer/elk migration routes	mapped migration routes	Oct 16 - Nov 30 & Mar 16 - May 14	208,720	N/A	N/A	N/A	**Deer or Elk Migration Corridor.** This area is located within a deer or elk migration corridor. No development is allowed within the mapped migration route from October 16 through November 30 and from March 16 through May 14. **Exception**: None developed. **Modification:** None developed. **Waiver:** None developed.
TL-21	Big game (all) severe winter range	mapped range	Dec 1 - Mar 31	318,420	N/A	N/A	N/A	**Elk, Pronghorn, or Deer Severe Winter Range**. This area is located within elk, pronghorn or deer severe winter range. Development activity may be deferred through the period of December 1 to March 31 on these mapped ranges when severe winter conditions (i.e. prolonged bouts of sub-zero daytime temperatures, heavy and/or crusted snowpack) prevail. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.
TL-22 (similar to CO-09)	Big game (deer/elk) severe winter range	critical habitats only	Dec 1 - Apr 30	N/A	167,840	N/A	N/A	**Big Game Severe Winter Range**. This area encompasses big game severe winter range--a habitat component considered critical to herd maintenance in applicable Data Analysis Units. No development is allowed within these critical habitats from December 1 to April 30. **Exception**: Under mild winter conditions, the last 60 days of the seasonal limitation period may be suspended. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the crucial winter range during the winter months. This limitation may or may not apply to work requiring a Sundry Notice pending environmental analysis of any operational or production aspects. **Modification**: None. **Waiver**: None.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-23 (similar to CO-09 revised)	Big game (deer/elk) severe range	mapped range	Dec 1 - Apr 30	N/A	N/A	613,510	613,510	**Big Game Severe Winter Range**. This area encompasses big game severe winter range. No development activity is allowed within these ranges from December 1 to April 30. **Exception**: The area manager may grant an exception if an EA finds that the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition within the project vicinity (e.g. evoke adverse alterations in animal distribution or add unacceptably to the energetic or nutritional demands of big game during the late winter or early spring). An exception may also be granted if the operator, BLM, and CDOW negotiate compensation that would satisfactorily offset anticipated impacts to big game winter activities or habitat condition. Exceptions may also be granted for actions specifically intended to enhance the long term utility or availability of suitable 'habitat. **Modification:** The area manager may modify the size and timeframes of the stipulation if CDOW monitoring information shows that current animal use patterns are inconsistent with dates established for animal occupation of the project area. Under mild winter conditions, when prevailing habitat or weather conditions allow early dispersal of animals from all or portions of a project area, the last 60 days of the seasonal limitation period may be suspended. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the crucial winter range during the winter months (which includes general animal condition). Modifications may also be authorized if the proposed action could be conditioned so as not to interfere with critical habitat function or compromise animal condition within the project vicinity (e.g. alter animal distribution or add unacceptably to the energetic or nutritional demands of local big game populations during the late winter or early spring). The stipulation may also be modified if the operator, BLM and CDOW agree to compensation that satisfactorily offset detrimental impacts to winter range activities or habitat condition. **Waiver**: This stipulation may be waived if the CDOW determines all or specific portions of the lease area no longer satisfy this functional capacity.

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-24 (similar to CO-11)	Pronghorn production areas	mapped areas	May 1 - Jun 30	2,720	N/A	N/A	N/A	**Pronghorn Production Area**. This area is located within a pronghorn production area. No development is allowed within the mapped area between May 1 and June 30. **Exception**: None developed. **Modification**: None developed. **Waiver**: None developed.
TL-25 (similar to CO-11)	Pronghorn production areas	critical habitat only	May 1 - Jul 15	N/A	0	N/A	N/A	**Pronghorn Production Area**. This area is located within a pronghorn production area--a habitat component considered critical to herd maintenance in applicable Data Analysis Units. No development is allowed within these critical habitats from May 1 to July 15. **Exception**: When it is determined through a site-specific environmental analysis that specific actions would not interfere with critical habitat function or compromise animal condition within the project vicinity, the restriction may be altered or removed. **Modification**: None. **Waiver**: None.
TL-26 (similar to CO-11 revised)	Pronghorn production areas	mapped area	May 1 - Jul 15	N/A	N/A	0	0	**Pronghorn Production Area**. This area is located within a pronghorn production area, which is not necessarily critical habitat?? No development is allowed within all mapped pronghorn production areas from May 1 to July 15. **Exception**: The area manager may grant an exception if an EA finds that the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition within the project vicinity (e.g. evoke adverse alterations in animal distribution or add unacceptably to the energetic or nutritional demands of pronghorn during parturition or early lactation periods). An exception may also be granted if the operator, BLM, and CDOW negotiate compensation which would satisfactorily offset anticipated impacts to pronghorn production or habitat condition. Exceptions may also be granted for actions specifically intended to enhance the long term utility or availability of suitable habitat.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-26 cont.								**TL-26 continued. Modification**: The area manager may modify the size and timeframe of the stipulation CDOW monitoring information indicates that current animal use patterns are inconsistent with dates established for animal occupation of the project area. Modifications may also be authorized if the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition (e.g. alter animal distribution or add unacceptably to the energetic or nutritional demands of pronghorns during parturition or early lactation periods). The stipulation may also be modified if the operator, BLM and CDOW agree to compensation that satisfactorily offset detrimental impacts to pronghorn production or habitat. **Waiver**: This stipulation may be waived if the CDOW finds that all or specific portions of the lease area no longer satisfy this functional capacity.
TL-27 (similar to CO-09 revised)	Pronghorn winter range	mapped area	Jan 1 - Apr 30	N/A	N/A	57,600	N/A	**Pronghorn Winter Range**. This area is located within pronghorn winter range. No development activity is allowed within the mapped area from January 1 through April 30. **Exception**: The area manager may grant an exception if an EA finds that the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition within the project vicinity (e.g. evoke adverse alterations in animal distribution or add unacceptably to the energetic or nutritional demands of pronghorn through the winter). An exception may also be granted if the operator, BLM, and CDOW negotiate compensation that would satisfactorily offset anticipated impacts to pronghorn winter activities or habitat condition. Exceptions may also be granted for actions specifically intended to enhance the long term utility or availability of suitable habitat.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-27 cont.								**TL-27 continued. Modification**: The area manager may modify the size and timeframe of the stipulation if CDOW monitoring information indicates that current animal use patterns are inconsistent with dates established for animal occupation of the project area. Modifications may also be granted when prevailing habitat and/or weather conditions allow unimpeded movements and dispersed distribution of animals across available winter range extent. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and animal distribution and condition. Modifications may also be authorized if the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition within the project area (e.g. adversely alter animal distribution or add unacceptably to the energetic or nutritional demands of a local pronghorn populations through the winter). The stipulation may also be modified if the operator, BLM and CDOW agree to compensation that satisfactorily offset detrimental impacts to pronghorn production or habitat conditions. **Waiver**: This stipulation may be waived if the CDOW finds that all or specific portions of the lease area no longer satisfy this functional capacity.

Table B-2 Continued

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-28 (similar to CO-09 revised)	Big game winter concentration areas (all species)	mapped areas	Jan 1 to Apr 30	N/A	N/A	231,920	N/A	**Big Game Winter Concentration Area**. This area is located within a big game (including deer, elk and pronghorn) winter concentration area. No development activity is allowed within these mapped areas from January 1 through April 30. **Exception**: The area manager may grant an exception if an EA finds the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition within the project area (e.g., adversely alter animal distribution or add unacceptably to the energetic or nutritional demands of big game during the mid to late winter period). An exception may also be granted if the operator, BLM, and CDOW negotiate compensation that would satisfactorily offset anticipated impacts to pronghorn production or habitat condition. Exceptions may also be granted for actions specifically intended to enhance the long term utility or availability of suitable habitat. **Modification**: The area manager may modify the size and timeframes of the stipulation if CDOW monitoring information indicates that current animal use patterns are inconsistent with dates established for animal occupation of the project area. Modifications may also be granted when prevailing habitat and/or weather conditions allow unimpeded movements and dispersed distribution of animals across available winter range extent. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and animal distribution and condition. Modifications may also be authorized if the proposed action could be conditioned so as not to interfere with habitat function or compromise animal condition (e.g. adversely alter animal distribution or add unacceptably to the energetic or nutritional demands of big game populations during the mid to late winter period). The stipulation may also be modified if the operator, BLM and CDOW agree to compensation that satisfactorily offset detrimental impacts to winter range activities or habitat condition. **Waiver**: This stipulation may be waived if that CDOW determines that all or specific portions of the project area no longer satisfy this functional capacity.

Stip Code	Location or Resource of Concern	Applicable Area	Date(s) of TL Stip	Alternative				
				A	B	C	D	
TL-29	Deer/elk summer range	mapped critical summer habitat	May 15 - Aug 15	N/A	N/A	404,420	404,420	**Deer and Elk Summer Range**. This area is located within deer and elk summer (dispersed birthing/rearing functions) ranges, which, due to limited extent, are considered critical habitat within appropriate Game Management Units. Development activity is allowed within these areas until direct and indirect impacts to suitable summer range habitats exceed 10% of that available within the individual GMU. Further development activity within such areas would not be allowed from May 15 to August 15. **Exception**: The area manager may grant an exception if an EA finds the proposed action could be conditioned to have no additional influence on the utility or suitability of summer range habitats (i.e. over and above 10% of total available habitat extent). An exception may also be granted if the operator, BLM, and CDOW negotiate compensation that would satisfactorily offset anticipated impacts to summer range function or habitat. Exceptions may also be granted for actions specifically intended to enhance the long term utility or availability of suitable habitat. **Modification**: The area manager may modify the size and timeframes of the stipulation if CDOW monitoring information indicates that current animal use patterns are inconsistent with dates established for animal occupation of the project area. Modifications may also be authorized if the proposed action could be conditioned to have no additional influence on the utility or suitability of summer range habitats (i.e., over and above 10 percent of total available habitat extent). **Waiver**: This stipulation may be waived if the CDOW finds that all or specific portions of the lease area no longer satisfy this functional capacity or that these summer ranges no longer merit critical habitat status.

Table B-3. Controlled Surface Use (CSU) Stipulation Areas

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-01	Soil management priority areas	mapped locations	16,490	N/A	N/A	N/A	**Soil Management Priority Areas (MPAs).** Soil MPAs are locations of extremely fragile soils. Surface disturbing activities and vegetation manipulations should not be allowed on these soil types because of the potential for increasing soil erosion and decreasing site productivity. Stabilization of soil conditions and reduction of soil loss will be a priority for these areas. This will be accomplished through watershed improvement practices, management practices by other activities that promote soil stability, and avoidance of surface-disturbing activities. Other uses will be allowed to the extent that they do not cause increased soil loss or erosion. **Exception**: None developed **Modification**: None developed **Waiver**: None developed
CSU-02	Steep slopes/fragile soils with soils >35 percent	mapped locations	N/A	N/A	N/A	484,120	**Fragile Soils on Slopes Greater than 35 Percent**: This is a controlled surface use area on slopes greater than 35 percent comprised of soils considered to be fragile. Surface disturbing activities may be allowed on delineated areas only after an engineering/reclamation plan is submitted by the operator and approved by the area manager. Such plans must demonstrate how the following will be accomplished: 1. Site productivity will be restored. 2. Surface runoff will be controlled to adequately protect off-site areas from accelerated erosion such as rilling, gullying, piping, and mass wasting. In addition, the following conditions of approval will be included in the application document or in the BLM authorizing document. Other similar conditions may be added at the time of approval. 1. All sediments generated from the surface-disturbing activity will be retained on site through BMPs listed in Appendix A. 2. Surface-disturbing activities will not be conducted during extended wet periods. 3. Construction will not be allowed when soils are frozen. 4. Vehicle use will be limited to designated roads and trails. 5. All geophysical and geochemical exploration will be conducted by helicopter, horseback, on foot, or from existing roads.

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-02 cont.							6. Before reserve pits and production pits are reclaimed, all residue will be removed and transported off site to an approved disposal site. 7. Reclamation of disturbed surfaces will be initiated prior to November 1 each year. **Exception**: Site specific exception to the CSU may be granted by the area manager if after detailed environmental analysis, effects of the proposed action are determined to be short term and/or of insignificant scale or can be sufficiently stabilized to prevent any long term decrease in site productivity or increase in erosion. An exception may also be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, determines that soil properties associated with the proposed action do not meet fragile soil criteria. **Modification**: The area manager may allow modification to this stipulation if the operator can show that surface disturbance can be conducted during extended wet or frozen conditions while successfully meeting the soil related objectives. Modifications may also be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, determines that soil properties associated with the proposed action do not meet fragile soil criteria. **Waiver**: None.
CSU-03	Saline soils (Mancos soils)	mapped locations	N/A	N/A	52,140	52,140	**Saline Soils (Mancos soils)**: This is a controlled surface use area on slopes greater than 35 percent comprised of soils considered to be fragile and also for Mancos saline soils. Surface disturbing activities may be allowed on delineated areas only after an engineering/reclamation plan is submitted by the operator and approved by the area manager. Such plans must demonstrate how the following will be accomplished: 1. Site productivity will be restored. 2. Surface runoff will be controlled to adequately protect off-site areas from accelerated erosion such as rilling, gullying, piping, and mass wasting. In addition, the following conditions of approval will be included in the application document or in the BLM authorizing document. Other similar conditions may be added at the time of approval.

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-03 cont.							**Saline Soils (Mancos soils) (continued).** 1. All sediments generated from the surface-disturbing activity will be retained on site through BMPs listed in Appendix A. 2. Surface-disturbing activities will not be conducted during extended wet periods. 3. Construction will not be allowed when soils are frozen. 4. Vehicle use will be limited to designated roads and trails. 5. All geophysical and geochemical exploration will be conducted by helicopter, horseback, on foot, or from existing roads. 6. Before reserve pits and production pits are reclaimed, all residue will be removed and transported off site to an approved disposal site. 7. Reclamation of disturbed surfaces will be initiated prior to November 1 each year. 8. Surface-disturbing fire suppression techniques will be restricted. **Exception:** Site specific exception to the CSU may be granted by the area manager if after detailed environmental analysis, effects of the proposed action are determined to be short term and/or of insignificant scale or can be sufficiently stabilized to prevent any long term decrease in site productivity or increase in erosion. An exception may also be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, determines that properties associated with the proposed action do not meet fragile soil criteria. **Modification**: The area manager may allow modification to this stipulation if the operator can show that surface disturbance can be conducted during extended wet or frozen conditions while successfully meeting the soil related objectives. Modifications may also be granted by the area manager if a more detailed soil survey, i.e., Order I, conducted by a qualified Soil Scientist, finds that soil properties associated with the proposed action do not meet fragile soil criteria. **Waiver**: None.

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-04	Designated ACECs- Deer Gulch, Lower Greasewood Creek	ACEC	2,020	2,020	2,020	2,020	**ACECs.** This a controlled surface use ACEC. The ACEC is known or has potential to contain (1) T/E plants or plants that are candidates for listing as T/E, (2) State of Colorado plant species of concern (Colorado Lists 1 and 2), (3) BLM sensitive plants, (4) remnant vegetation associations (RVAs), (5) unique plant communities, (6) cultural resources, or combinations of the above. An on-the-ground survey will be conducted prior to approving any surface-disturbing activity in these ACECs, and the resources of concern will be mapped. Surface disturbance will not be allowed within (1) mapped known and potential habitat of T/E plants and plants that are candidates for listing as T/E (see stip NSO-024) and (2) mapped Colorado list, sensitive, and RVA plant locations (see stip NSO-025), (3) mapped plant community locations, and (4) mapped cultural sites (see stip NSO-26). These mapped habitats, locations, and sites are open for public utilities and are closed to mineral material sales and other surface-disturbing activities. The presence of any of the six special features noted above may require relocating surface activities more than 200 meters or (in the case of time-specific ground surveys for specific plants) deferring activities longer than 60 days. The remaining area (not mapped as NSO) within the ACEC is also subject to other surface stipulations for soils and wildlife (e.g., NSO wildlife stipulations, NSO soils stipulations, wildlife timing limitations, and soils/wildlife CSU stipulations). **Exception**: An on-the-ground survey will be conducted on previously-unsurveyed land within the ACEC. Plant locations and habitat of sensitive plants and remnant vegetation associations will be mapped. This stipulation may be excepted by the area manager in areas outside the mapped area if an environmental assessment finds the plants for which the ACECs are being proposed would no be affected. **Modification**: None **Waiver**: None
CSU-05	Designated ACECs - Dudley Bluffs (1,630 acres), and Yanks Gulch/Upper Greasewood Creek (2,680 acres)	ACEC	4,310	4,310	See NSO-19	4,310	See CSU-04

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-06	Proposed ACECs - North Cathedral Bluffs (5,730 Acres), Soldier Creek (2,150 acres)[1/]	ACEC	N/A	7,880	N/A	N/A	See CSU-04
CSU-07	Proposed ACECs - Ryan Gulch (1,440 acres), Duck Creek (3,430 acres)	ACEC	N/A	N/A	N/A	4,870	See CSU-04. In addition, the Duck Creek Wickiup Site is NSO (see NSO-23).
CSU-08	Proposed ACECs - White River Riparian, Coal Oil Rim, Oil Spring Mountain, and East Douglas Creek[2/]	ACEC	N/A	N/A	70,030	70,030	**ACECs.** See CSU-04.

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-09	Proposed ACEC - Texas-Missouri Evacuation Creek	ACEC	N/A	N/A	22,510	N/A	**Texas-Missouri-Evacuation Creek.** All proposed actions will be reviewed for conflicts with known archaeological or historical resources.In all cases where a proposed action appears to conflict with known archaeological/historical, a pedestrian inventory of 100 percent of the proposed project area will be conducted using standard specified in Appendix B of the Programmatic Agreement among Colorado Bureau of Land Management and Colorado State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (PA 1987). In the event archaeological/historical resources are located during inventory, the proposed action will be relocated to avoid and protect the cultural values. The extent of the relocation will be conditioned by the nature and extent of the proposal and the type of cultural resources involved. Proposed actions that produce strong, sustained vibrations, supersonic, sonic, or low frequency subsonic vibrations are of particular concern for rock art sites or sites with architecture such as granaries, wickiups, or rock or mud walls. Therefore, proposed actions that will result in the production of supersonic, sonic, or low frequency subsonic vibrations shall be required to relocate to a distance far enough away from the resources of concern to fully attenuate the resultant vibrations. Standard and procedures described in *A Vibration Study of the Archaeological Ruins,* Hovenweep National Monument, Utah-Colorado shall be used to measure vibrations and attenuation rates to prevent or reduce losses due to vibration induced structural failures of architecture or formations supporting rock art panels. All will, at a minimum, be submitted to the SHPO for review according to the programmatic agreement. Review by the Advisory council on Historic Preservation according to the programmatic agreement may also be required in some cases. **Exception**: None **Modification**: None **Waiver**: None

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-10	Wild Horse herd management areas	herd management areas	N/A	N/A	179,230	179,230	**Wild Horse Habitat**. This is habitat for wild horses. In order to protect wild horses within the herd management area(s), no intensive construction activity will be permitted for a specified 60-day period within the spring foaling time of March 1 to June 15. The following controls apply in this area: (1) activities/improvements will provide for unrestricted movement of wild horses between summer and winter ranges; (2) disturbed watering areas will be replaced in adjacent areas providing a dependable water supply; (3) habitat improvement projects in adjacent areas may be required if development displaces wild horses from critical habitat. **Exception**: None **Modification:** None **Waiver**: None
CSU-11	Ferret reintroduction areas	mapped areas	N/A	53,830	53,830	53,830	**Black Footed Ferret Reintroduction Area**. This is a controlled surface use area for promoting the successful reestablishment and development of a self-sustaining black-footed ferret population. Prior to authorizing activities in this area, and pending conferral or consultation with the USFWS as required by the *Endangered Species Act*, the area manager may require the operator to submit a plan of development that demonstrates how proposed activities would be conducted or conditioned to avoid the direct or indirect loss of black-footed ferrets (e.g., road-kills, increased vulnerability to predation) or avoid deteriorating the capability of the site to achieve reestablishment objectives (i.e., adverse influences on the distribution or abundance of prairie dogs, disruption of reproductive activities). Restrictions

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-11 cont.	Ferret reintroduction areas	mapped areas	N/A	58,790	58,790	58,790	**Black Footed Ferret Reintroduction Area (continued)** and limitations would be included in a ferret reintroduction plan which, for oil and gas operations, would closely conform to those developed cooperatively by the USFWS and RMOGA (*Draft Guidelines for Coordinating Oil and Gas and Black-Footed Ferret Recovery in Designated Management Areas, 1991*). The reintroduction plan may require the operator to relocate surface activities more than 200 meters or defer activities longer than 60 days. The area manager may also limit operator access to designated roads/trails, require modifications to facility design or siting (e.g., preventing use of electric transmission facilities as raptor perches, prohibit disruption of certain or all prairie dog burrow systems), limit surface disturbance to certain seasons and times of day, require the operator to participate in ferret surveys and in efforts to expand the suitability or distribution of prairie dog habitats to compensate for unavoidable habitat losses. **Exception**: The area manager may authorize surface disturbance or use within these areas if an EA and associated biological assessment finds that the activity would not adversely influence ferret recovery or conflict with the ferret reintroduction and management plan. Exceptions may be granted prior to development of the management plan through Section 7 consultation with the USFWS. Project approval would be contingent on an EA that finds the project would not adversely influence the suitability or capacity of the site to fulfill ferret recovery objectives. An activity may also be excepted if the proposed action includes compensations measures that fully offset in-kind impacts to the current capacity of the area to support black-footed ferrets. **Modification**: Integral with stipulation and exception criteria, stipulation provisions could be modified. **Waiver**: A waiver may be granted if extirpation of wild, free-roaming ferret populations is documented and the reintroduction program collapses (i.e. no anticipated release of propagated ferrets in areas without wild populations).

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-12	Aspen, serviceberry, chokecherry communities north of Highway 40[2/] (big game and blue grouse habitat areas)	mapped areas	N/A	N/A	61,540	61,540	**Blue Mountain Deciduous Browse/Aspen Communities.** This is a controlled surface use area for maintaining the distribution, condition, and functional capacity of deciduous browse and aspen communities central to high priority big game and blue grouse habitats. Prior to authorizing activities in this area, the operator would be required to submit a plan of development that demonstrates that: (1) involvement of aspen, serviceberry and chokecherry associations have been avoided to the extent possible, (2) special reclamation measures or design features would promote accelerated recovery and/or reestablishment of desirable community components and attributes (e.g. composition, extent, distribution, vigor and form) at levels commensurate to acreage affect by unavoidable involvement (including means for protecting regeneration from excessive browsing by livestock and big game), (3) through project life, unavoidable involvement of community derived values are directly or indirectly mitigated, and (4) the potential and/or capacity of these sites to support viable, self-sustaining aspen, serviceberry, and chokecherry communities has not been diminished (soil and moisture related aspects).Surface disturbance or occupation within aspen, serviceberry, or chokecherry communities may be prohibited. Special reclamation practices or mitigation measures that may be applied include: transplanting of containerized or bare root stock, providing supplemental nutrients, soil amendments and/or sources of water to improve plant establishment, protective fencing, off-site vegetation treatments designed to improve target community vigor and condition and/or functional wildlife values, and providing off site facilities specifically designed to moderate big game or livestock-related influences on target vegetation communities (e.g. alternate delivery or sources of water). **Exception**: The area manager may authorize surface disturbance in this area if properly established that the action would not, as proposed or subsequently conditioned, involve or adversely influence desirable attributes of target vegetation communities (as stated above) or their wildlife-related functions. Surface disturbance and occupation may also be authorized in the event that unavoidable impacts to the vegetation community or vegetation derived habitat values would be compensated or offset to the satisfaction of the BLM. **Modification**: Integral with stipulation and exception. **Waiver**: None

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-13	Bald eagle nest, roost, and perch substrate within the White River ACEC	mapped cottonwoods	N/A	N/A	6,720	6,720	**Bald Eagle Nest, Roost, and Perch Substrate**. This is a controlled surface use area for maintaining the long term suitability, utility and development opportunities for specialized habitat features involving nest, roost and perch substrate for bald eagles on federal lands. Prior to authorizing surface disturbance within these areas, it must be demonstrated to the area manager through a plan of development that: (1) involvement of cottonwood stands or regeneration has been avoided to the extent possible, (2) special reclamation measures or design features are incorporated that would accelerate recovery and/or reestablishment of cottonwood trees and/or regeneration commensurate with those lost through unavoidable involvement, (3) the prior potential of floodplain areas to develop or support riverine cottonwood communities has not been diminished, and (4) the future and/or current utility of such cottonwood substrate for bald eagle use would not be impaired. Any action within these areas may be subject to Section 7 Consultation with the USFWS as mandated by the *Endangered Species Act* to determine and evaluate the effects of an action on bald eagles and their habitat and options available for avoiding and/or compensating detrimental aspects of project work on the same. Limitations which may be enacted in these areas could include: siting modifications and timing limitations in excess of 200 meters or 60 days, respectively, noise attenuation measures, prohibited removal/modification of cottonwood vegetation, and access restrictions. Measures which may be required to mitigate unavoidable loss may involve: supplemental establishment of cottonwood plants, protective fencing, road/trail realignments, bank contouring and stabilization practices. **Exception**: The area manager may authorize surface disturbance and use in these areas if it is determined that proposed or conditional activities would not affect the long term suitability or utility of habitat features or diminish opportunities for natural floodplain functions by which cottonwood establishment would be a logical derivative. Surface disturbance and occupation may also be authorized in the event that established impacts to habitat values would be compensated or offset to the satisfaction of the BLM in consultation with the USFWS and CDOW. **Modification**: Integral with stipulation and exception **Waiver**: None

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-14	Colorado River cutthroat trout habitat in East Douglas ACEC, Big Beaver watershed, Trapper's watershed	mapped areas	N/A	N/A	67,830	67,830	**Colorado Cutthroat Trout Habitat**. This is a controlled surface use area for protecting existing conditions of and gains made in improving aquatic habitats occupied by candidate populations of Colorado River cutthroat trout. Prior to surface disturbance within these areas, it must be demonstrated to the area manager through a plan of development that the following influences could not be directly or indirectly attributed to the activity. In the event these standards are exceeded during or after implementation, additional remedial measures may be required of the permit holder to correct identified deficiencies, and such actions would remain subject to the approval of the area manager. The permit holder may be required to establish pre-existing stream/channel conditions and monitor stream/channel response through project life by methods subject to the approval of the area manager. Applicable watershed-wide in affected channel reaches: (1) Increase in stream gradient (increases not to exceed existing gradient by more than 5 percent), (2) Evidence of accelerated erosion and/or net increase in sediment contribution (i.e. direct: pad/road drainage, piping versus indirect: destabilized slopes, ineffective vegetation cover to intercept sediment from rill/sheet erosion), (3) Decrease in channel sinuosity (decreases not to exceed existing ratio by more than 5 percent), (4) Increase in channel width:depth ratio (increases not to exceed existing ratio by more than 5 percent Applicable to affected perennial reaches (fisheries): 1. Increase in water temperature under similar conditions (> 1 degree F ave daily temp) 2. Decrease in vegetation-derived stream shading (not to exceed 1% of existing) 3. Decrease in water quality parameters, including: (a) specific conductance (not to exceed existing conductivity values by 10% under similar conditions), (b) Turbidity (not to exceed existing nephelometric turbidity units (NTU) values by > 10% under similar conditions), (c) Contaminant levels (not to exceed state established criteria for cold water fisheries?), and (d) Dissolved oxygen (decreases in DO concentrations not to exceed 10% of existing under similar conditions). Practices that may be required to realize these goals: (1) fencing, (2) establishment of undisturbed vegetation buffers, (3) special reclamation requirements to reestablish desired floodplain/terrace vegetation, (4) pit lining (5) sediment retention pits, (6) water distribution devices and/or pad design modifications (e.g. to control overland flow and/or runoff), (7) channel structures and maintenance (e.g. in-stream), (8) pad/road/ROW relocation in excess of 200 meters.

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-14 cont	Colorado River cutthroat trout habitat (continued)		N/A	N/A	67,830	67,830	**Colorado Cutthroat Trout Habitat (continued).** Exception: Short term standard violation may be allowed by the area manager during the construction and reclamation phases of project work as long as area manager determines that such failings will have no long term consequences on downstream or upstream channel reaches. **Modification**: Not-to-exceed standards may be modified by the area manager, temporarily or through the term of a lease, if it can be demonstrated to the satisfaction of the area manager that all or certain standards listed above are unnecessarily restrictive in the context of fisheries and/or aquatic system quality. **Waiver**: In the event the population status of Colorado cutthroat trout warrants downgrading, this stipulation may be altered or replaced by less stringent criteria.
CSU-15	Canyon Pintado Cultural Historic District	Designated district	N/A	N/A	16,040	16,040	**Canyon Pintado Historic District - Cultural Resources**. All proposed actions will be reviewed for conflicts with known archaeological or historical resources. In all cases where a proposed action appears to conflict with known archaeological/historical values, a pedestrian inventory of 100 percent of the proposed project area will be conducted using standards specified in Appendix B of the *Programmatic Agreement* among U.S. Department of the Interior, Bureau of Land Management, Colorado and State Historic Preservation Officer, Colorado; and Advisory Council on Historic Preservation 1987 (PA 1987). In the event archaeological/historical resources are located during inventory, the proposed action will be relocated to avoid and protect the cultural values. The extent of the relocation will be conditioned by the nature and extent of the proposed action and the type of cultural resources involved. Proposed actions, which produce strong, sustained vibrations, supersonic, sonic, or low frequency subsonic vibrations are of particular concern for the rock art sites or sites with architecture such as granaries, wickiups, or rock or mud walls. Therefore, proposed actions that will result in the production of supersonic, sonic or low frequency vibrations shall be required to relocate to a distance far enough away from the resources of concern to fully attenuate the resultant vibrations. Standards and procedures described in *A Vibration Study of the Archaeological Ruins, Hovenweep National Monument, Utah-Colorado* shall be used to measure vibrations and attenuation rates to prevent or reduce loss due to vibration induced structural failures of architecture or formations supporting rock art panels. All studies will, at a minimum, be submitted to the Colorado State Historic Preservation Officer for review according to the programmatic agreement of 1987. Review by the Advisory Council on Historic Preservation, according to the programmatic agreement of 1987, may also be required in some cases.

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-15 cont	Canyon Pintado Historic District (continued)						**Canyon Pintado Historic District - Cultural Resources (continued)** Proposed actions that may pose a threat to cultural resources that do not contain rock art or standing architecture will be relocated to a distance far enough away, as determined by the area manager, to ensure that the resources are protected from impacts due to construction and/or routine, day-to-day operations. **Exception**: In the event the project proponent demonstrates to the satisfaction of the area manager that for engineering reasons it is impossible or impractical to relocate the proposed vibration producing facilities the proponent may place facilities in areas where vibrations may cause potential harm to cultural values such as rock art or standing architecture provided: (1) a treatment plan using the most current theories and technologies for preservation/data recovery is prepared for each threatened resource, (2) the plan conforms in all respects to the Secretary of the Interior's standards and guidelines for the treatment of historic properties, (3) the plan is reviewed and accepted by the State Historic Preservation Officer, Colorado, and the Advisory Council on Historic Preservation, as required by Section 106 of the National Historic Preservation Act, as amended (36 CFR 800.3(3), 36 CFR 800.4) and the programmatic agreement of 1987. **Modification**: None. **Waiver**: None.

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-16	Class I Paleontological Areas	mapped formations	750,750	750,750	750,750	750,750	**Paleontological Values**. This is a Class I paleontological area that has the potential to contain important fossils. Prior to authorizing any surface-disturbing activities, BLM will make a preliminary determination based on rock outcrops and scree slopes on whether any potential exists for fossil material. If the area lacks fossil potential (deep soil cover and general lack of exposures), the BLM will not require a fossil survey for any surface-disturbing activity. If the potential exists for fossil finds, the area will be required to have a Class I survey completed by the operator prior to engaging in any surface-disturbing activity. Discovered fossil sites will be mapped and avoided, which could require relocation of the project by more than 200 meters or attaching other appropriate mitigation to the land use authorization. The Mitigation could require excavation of fossils. The BLM may require a qualified paleontologist be present to monitor operations during surface-disturbing activities. BLM will determine the disposition of any fossils uncovered during monitoring. **Exception**: None **Modification**: None **Waiver**: None
CSU-17 (CO-25)	Approved Coal Mine	within area of surface or underground mine	N/A	8,146	8,146	8,146	**Approved Coal Mine**. This area is the site of an approved surface or underground coal mine. Operations proposed within the approved coal mine area will be relocated outside the area to be mined or will accommodate room and pillar mining operations. **Exception**: This stipulation may be excepted if the lessee agrees to the following conditions: (1) The well will be plugged when the mine approaches within 500 feet of the well and reentered or redrilled upon completion of the mining operation. The well will be plugged according to Mine Safety and Health Administration Informational Report 1052, the operator will provide accurate location of where the casing intercepts the coal by providing a directional and deviation survey of the well to the coal operator or (2) the well will be relocated into a permanent pillar or outside the area to be mined. A suspension of operations and production will be considered when the well is plugged and a new well is to be drilled after mining operations move through the location. **Modification**: Any changes to this stipulation will be made according to the land use plan and/or the regulatory provisions for such changes. For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101 or FS Manuals 1950 and 2820. **Waiver**: None

Table B-3 Continued

Stip Code	Location	Applicable Area	Alternative				Stipulation Code Description
			A	B	C	D	
CSU-18	Harper's Corner Road Scenic Easement	400 feet both sides of NPS boundary	2,530	2,530	2,530	2,530	**Scenic Easement - 400 feet each side of Harper's Corner Road beginning at Park Service boundary**. One-hundred feet on either side of Harper's Corner Road centerline belongs to the National Park Service. A scenic easement along this road begins at the Dinosaur National Monument boundary and extends out on both sides of the road for 400 feet. This is a visibly sensitive area. The BLM will consult with the National Park Service prior to issuing permits for surface-disturbing activities within the scenic easement. Special design and reclamation measures might be required. These measures might include transplanting trees and shrubs, fertilization, mulching, constructing special erosion control structures, irrigation, site recontouring to match the original contour, buried tanks and low profile equipment, and painting to minimize visual contrasts. It is also possible that the project would have to be moved more than 200 meters. **Exception**: None **Modification**: None **Waiver**: None

[1/] Soldier Creek Proposed ACEC is included in East Douglas Creek proposed ACEC under Alternatives C and D.
[2/] Includes Soldier Creek.
[3/] Does not apply to the Moosehead proposed ACEC.

Table B-4. Lease Notices

Stip Code	Resource of Concern	Applicable Area	Stipulation Code Description
LN-01	National Park Service road	Harper Corner Road	**National Park Service**. The National Park Service does not permit the commercial use of roads under their administration. Potential lease bidders will need alternate access routes for exploration and developmental activities.
LN-03	Prairie dog towns	Mapped areas	**Prairie Dog Towns**. Lands within this lease parcel involve prairie dog ecosystems that constitute potential habitat for wild or reintroduced populations of the federally endangered black-footed ferret. Conservation and recovery efforts for the listed black-footed ferret are authorized by the *Endangered Species Act* of 1973 (as amended). The successful lessee may be required to perform special conservation measures prior to and during lease development. These measures may include one or more of the following: 1.Performing site-specific habitat analysis and/or participating in black-footed ferret surveys according to most current U.S. Fish and Wildlife Service guidelines. 2. Participating in the preparation of a surface use plan of operations with BLM, USFS, and CDOW, which integrates and coordinates long-term lease development plans with those measures necessary to minimize adverse impacts on black-footed ferret and associated habitat. 3. Abiding by special daily and seasonal activity restrictions imposed on construction, drilling, operations, product transport and service activities. 4. Incorporating special modifications to facility siting, design, construction, and operation including roads, pads, pipelines, storage facilities, and powerlines. 5. Providing in-kind compensation for habitat loss and/or displacement of black-footed ferrets (e.g, special on-site rehabilitation/revegetation measures, off-site habitat enhancement).
LN-04	Paleontological resources	Wasatch, Uinta, DeBeque, Upper Mesa Verde, and Green River Formations	**Paleontological Values**. This is a Class I paleontological area that has the potential to contain important fossils. Prior to authorizing any surface-disturbing activities, BLM will make a preliminary determination based on rock outcrops and scree slopes on whether any potential exists for fossil material. If the area lacks fossil potential (deep soil cover and general lack of exposures), the BLM will not require a fossil survey for any surface-disturbing activity. If the potential exists for fossil finds, the area will be required to have a Class I survey completed by the operator prior to engaging in any surface-disturbing activity. Discovered fossil sites will be mapped. Mapped fossil sites will be protected by relocating the project more than 200 meters or applying a appropriate mitigation to the land use authorization. The mitigation could require excavation of fossils. The BLM may require a qualified paleontologist be present to monitor operations during surface-disturbing activities. BLM will determine the disposition of any fossils uncovered during monitoring.

Note: Lease notices would apply under all alternatives.

APPENDIX C
OIL AND GAS LEASING PROCESS

As explained in Chapter 2, Certain BLM lands in the resource area would be unavailable for leasing and development because of nondiscretionary no lease and discretionary no lease decisions. The remaining lands would be available for leasing subject lease terms authorized by BLM Standard Lease Form 3100-11 and surface stipulations developed in this RMP (see Appendix B for leasing stipulations).

STANDARD LEASE TERMS

All leases are issued on BLM Standard Lease Form 3100-11. This form contains standard lease terms that are applicable to all leases. This form gives the area manager authority to modify operations (exploration, development, production, and maintenance) at the time they are proposed. A modification of operations under standard lease terms is considered a mitigation measure rather than a stipulation.

The modification is developed after rather than before issuance of the lease. This mitigation is attached to operational approvals for applications for permit to drill (APDs) and sundry notices as conditions of approval (COA).

Under Sections 2 and 6 of the standard lease terms, the area manager has authority to modify operations consistent with lease rights. This is done to minimize adverse impacts to other resource values, land uses, or land users. Under the standard lease terms, the BLM may require modification to the siting, design, and timing of operations on leaseholds and specify interim and final reclamation measures. Appendix A includes a list of best management practices that would be used in the design of oil and gas operations. The area manager also has the authority under Section 6 to deny operations that would adversely affect resources protected by law such as cultural resources or threatened and endangered plants and animal species.

To be consistent with lease rights under standard lease terms, operations may not be denied unless operations would adversely affect resources protected by law, i.e., cultural resources or threatened and endangered plant and animal species. In addition, the area manager cannot require operations be (1) moved off the leasehold, (2) moved by more than 200 meters, or (3) delayed for longer than 60 days in any lease year.

Operations proposed on lands with standard lease terms would be subject to the 200 meter/60 day-thresholds, interim and final reclamation measures listed in Appendix A, and applicable laws such as the *Endangered Species Act*.

LEASING WITH SURFACE STIPULATIONS

Lands that need protection above and beyond that authorized under standard lease terms are leased with surface stipulations. Lands leased with surface stipulations have resource values, uses, or users other than oil and gas that are considered equally or more important to the public than that of oil and gas extraction. Lands identified as available for leasing with surface stipulations are leased with the least restrictive surface stipulation needed to achieve other resource protection goals.

In contrast to mitigation applied under standard lease terms, surface stipulations are placed on leases at the time they are issued. Surface stipulations may require operations be (1) moved off the leasehold, (2) moved farther than 200 meters, or (3) delayed longer than 60 days. Surface stipulations could result in denial of operations within the terms of the lease contract.

Lands leased with surface stipulations are also subject to the mitigation authorized under Sections 2 and 6 of BLM Standard Lease Form 3100-11. This includes interim and final reclamation measures listed in Appendix A, Best Management Practices, and applicable laws such as the *Endangered Species Act*.

Three surface stipulations are applied to leases in the White River Resource Area: (1) no surface occupancy (NSO), (2) timing limitation (TL), and (3) controlled surface use (CSU). Of these stipulations, the NSO stipulation is the most restrictive.

Presently, the only surface stipulations available in the White River Resource Area are those that were developed

for oil and gas leasing. The oil and gas leasing stipulations were developed through the *White River Resource Area Umbrella Oil and Gas Environmental Assessment* (EA) prepared in 1982. The oil and gas umbrella EA stipulations are applicable only to Alternative A. Surface stipulations developed in this RMP would be applicable to Alternatives B, C, and D.

Appendix B, Surface Stipulations, lists, by alternative, the surface stipulations that would be applied to lands available for leasing with surface stipulations. These stipulations also would be applied to other surface-disturbing activities authorized in the White River Resource Area.

NO SURFACE OCCUPANCY

A no surface occupancy stipulation prohibits the lessee from occupying all or a portion of the surface of the lease tract year-round. The NSO stipulation can require relocation of proposed operations by more than 200 meters. The area manager can make exceptions, modifications, or waivers to the NSO stipulation under the conditions specified in the applicable NSO stipulation.

Appendix B lists the areas by alternative that would be subject to an NSO stipulation. This stipulation would be applied to all new leases and lease renewals where applicable. Appendix B lists the leasing code that further describes the area covered by the stipulation and the conditions under which the stipulation could be exempted, modified, or waived.

TIMING LIMITATIONS

A timing limitation (TL) stipulation prohibits exploration and development activities during specified times of year on all or portions of the lease tract. The TL stipulation can require the lessee to suspend operations for more than 60 days during one year. The area manager may make exceptions, modifications, or waivers to the TL stipulations under the conditions specified in the applicable TL stipulation.

Appendix B lists TL that would be attached to all new leases and lease renewals. Appendix B also lists the leasing code that further describes the area covered by the stipulation and the conditions under which the stipulation could be exempted, modified, or waived.

CONTROLLED SURFACE USE

A controlled surface use (CSU) stipulation places requirements on the lease that could include standards that exceed the mitigation available under the lease terms. A CSU cannot result in areas of NSO or TL. A CSU stipulation also can require special management practices to protect sensitive resources. The area manager may make exceptions, modifications, or waivers to the CSU stipulations specified in the applicable stipulation.

Appendix B lists CSU stipulations that would be attached to all new leases and lease renewals in the White River Resource Area. The acreage by alternative that would be subject to a CSU is given. It also lists the leasing code, describes the design features that may be required, and describes the conditions under which the stipulation could be exempted, modified, or waived.

LEASING NOTICES

Leasing notices (LN) may be attached to all leases regardless of the leasing subcategory. A LN provides more detailed information about limitations that may be applicable under existing law, lease terms, regulations, or operational orders. An LN also addresses special items the lessee should consider when planning operations. The LN does not impose any restrictions other those applicable under existing law, lease terms, regulations, or operational orders.

Appendix B lists the leasing notices that would be applied to leases and lease renewals in the White River Resource Area. These lease notices would be common to all alternatives.

APPLICATION OF SURFACE STIPULATIONS

Stipulations are applied to oil and gas leases by legal description on the basis of standard quarter-quarter sections (40 acres) or lots. Any quarter-quarter section or lot needing protection on at least one half the subdivision

has the appropriate stipulation appended to the lease document for the entire subdivision. A quarter-quarter section or lot needing protection on one half or less of the subdivision does not have a stipulation appended to the document for that subdivision. That small a parcel can be avoided through standard lease terms.

EXCEPTIONS, MODIFICATIONS, AND WAIVERS

Surface stipulations can be exempted, modified, or waived but only by the area manager. Appendix B explains exceptions, modifications, and waivers.

APPENDIX D
RANGE MANAGEMENT

INTRODUCTION

Table D-1, lists livestock grazing allotments in the White River Resource Area. It lists the number and kind of livestock on each allotment, period of use, and other useful information about the allotments.

GRAZING ALLOTMENTS

Table D-1. Grazing Allotments

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06001	Puckett Gulch	051400	92	C	05/01-09/30	13	1040	60	03/20-07/01 Yearly	M	
06002	Pine Knott Gulch	051451	53	C	09/01-11/30	60	1036	95	03/20-07/01 Yearly	M	
06003	Wood Road Gulch	051493	29	C	06/01-10/30	50	1099	72	03/20-07/01 1 in 2	M	
06004	Powerline	051403	103	C	05/16-06/30	46	571	72		M	
06005	North Dry Fork	051403	65	C	04/16-06/30	74	12103	120	03/15-06/20 2 in 3	I	A
			127	C	05/16-06/30	74		142			
			100	C	11/01-12/15	74		109			
		051404	26	C	04/16-06/30	100		65			
			127	C	05/16-06/30	100		192			
			100	C	11/01-12/15	100		148			
06006	Little Hills	051403	157	C	05/01-10/30	100	53055	945	03/15-06/20 Yearly 04/10-07/05 1 in 2	I	
		051405	50	C	04/15-04/30	100		26			
			110	C	05/01-10/30	100		662			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
			5	H	05/01-10/30	100		30			
			98	C	05/01-10/30	100		590			
			100	C	05/01-10/30	100		602			
			145	C	12/01-12/31	100		148			
		051407	100	C	11/01-11/30	100		99			
			292	C	12/01-12/31	100		298			
			100	C	01/01-01/30	100		99			
		051408	139	C	11/01-11/30	100		137			
			277	C	12/01-12/31	100		282			
			139	C	01/01-01/30	100		137			
		051409	383	C	11/01-11/30	100		378			
			840	C	12/01-12/31	100		856			
			404	C	01/01-01/31	100		412			
		051449	60	C	06/01-10/30	100		300			
06007	Main Dry Fork	051403	183	C	07/01-10/31	100	9705	740	04/10-07/01 Yearly	I	A
		051404	165	C	07/01-10/30	100		662			
06008	Segar Gulch	051403	293	C	06/01-10/30	100	20382	1464	04/01-07/15 1 in 4	I	A
		051410	195	C	06/01-10/30	100		974			
06009	Hyberger	051411	70	C	06/01-10/31	100	1873	352	04/10-06/10 Yearly 06/10-07/15 1 in 2	I	
06010	Little Rancho	051412	52	C	06/01-10/31	100	1330	262	04/10-07/15 Yearly	C	
06011	Thirteen Mile	051413	104	C	06/01-09/20	100	7367	383	04/10-06/01 Yearly 06/01-07/15 1 in 2	I	
			96	C	06/01-09/30	100		385			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06012	Upper 13 Mile	051414	115	C	06/01-10/25	27	606	150	04/10-06/01 Yearly 06/01-07/15 1 in 3	C	
06013	Fourteen Mile	051414	75	C	06/01-09/30	28	2461	84		M	
			210	C	10/11-01/30	28		217			
06014	Lower Fourteen Mile	051446	430	S	05/21-06/30	74	2911	86	04/10-07/15 1 in 2	I	A
			850	S	11/01-11/20	74		83			
06015	Gordon Gulch	051415	1000	S	05/02-05/31	44	5446	87	04/10-07/15 1 in 2	I	
			1000	S	06/01-06/30	100		197			
			1000	S	10/01-10/25	100		164			
06016	Davis Creek	051416	2200	S	05/01-06/30	31	4853	274	04/20-07/20 1 in 2	I	
			2200	S	09/16-11/15	31		274			
06017	Coal Mine Ind.	051418	3	C	05/15-09/30	100	80	14	04/20-07/20 2 in 3	C	
06018	Schutte Gulch	051415	1200	S	05/10-07/02	33	4257	141		I	
			1200	S	09/16-10/06	33		55			
06019	Cow Creek	051418	350	C	06/15-09/30	64	6487	795	04/28-07/25 1 in 2	I	
		051429	2700	S	05/10-06/15	18		118			
			1500	S	06/06-06/27	18		39			
			2350	S	10/01-11/15	18		128			
06020	Brush Hole	051491	400	S	06/01-09/30	33	840	106		C	
06023	Piceance Mountain	051407	400	C	05/01-05/15	49	74453	97	03/25-06/15 1 in 3 04/20-07/10 1 in 3 04/25-08/01 1 in 3	I	A
			580	C	05/16-10/30	49		1570			
		051408	1026	C	05/15-11/15	61		3807			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
		051409	650	C	05/01-05/15	28		90			
			1300	C	05/16-10/31	28		2022			
			600	C	11/01-11/15	28		83			
		051420	50	C	05/01-10/30	100		301			
		051421	580	C	05/01-06/20	59		574			
			353	C	10/16-11/14	59		205			
			177	C	11/15-01/30	59		264			
06024	Fawn Creek	051422	906	C	05/01-06/15	70	19125	959	03/25-06/15 1 in 2 & 04/25-07/20 1 in 2	I	A
			906	C	06/16-10/09	5		173			
			15	H	05/01-10/31	70		64			
			650	C	10/10-11/15	70		553			
06025	Skinner Ridge	051422	105	C	06/17-10/31	23	1110	109	04/25-07/20 1 in 2	M	
		051423	105	C	06/17-10/31	23		109			
06026	Reagles	051424	215	C	05/01-12/15	59	18367	955	03/25-06/15 1 in 2 & 04/20-07/15 1 in 2	I	A
06027	Square S	051425	670	C	05/01-11/30	52	64050	2451	03/25-06/15 1 in 3	I	A
		051432	193	C	05/01-11/30	80		1086			
06028	Hatch Gulch	051422	150	C	11/01-11/30	100	8583	148	03/25-06/15 Yearly	M	
			300	C	12/01-12/31	100		306			
			150	C	01/01-01/31	100		153			
		051423	56	C	12/01-12/31	100		57			
		051486	102	C	12/01-12/31	100		104			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06029	Black Sulphur	051423	350	C	05/01-06/15	86	17308	455	03/25-06/15 1 in 2 04/20-07/15 1 in 2	I	
			350	C	11/01-11/30	86		297			
		051486	100	C	05/01-06/15	100		151			
			100	C	11/01-11/30	100		99			
06030	Yellow Creek	051405	100	C	04/15-05/15	100	63191	102	03/15-06/01 1 in 2 03/25-06/15 1 in 2 04/20-07/15 1 in 2	I	
			240	C	05/01-05/15	93		110			
			340	C	05/16-06/30	93		478			
			277	C	05/16-06/30	93		390			
			414	C	07/01-10/15	31		451			
			465	C	10/16-12/30	93		1081			
			120	C	01/01-01/31	100		122			
06031	Duck Creek	051426	130	C	03/01-06/30	81	21802	422	03/25-06/20 1 in 2 04/20-07/15 1 in 2	I	
			130	C	07/01-12/15	81		582			
			130	C	12/16-02/28	81		260			
06032	Spring Creek	051427	250	C	04/14-05/14	76	32905	194	03/25-06/01 1 in 2 04/10-06/20 1 in 3 04/20-07/15 1 in 3	I	
			500	C	05/15-06/30	76		587			
			500	C	07/01-10/31	76		1537			
			500	C	11/01-02/16	76		1349			
06033	E Fork Spring Creek	051428	75	C	05/10-10/09	52	2927	196	04/20-07/25 1 in 2	C	

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06036	Greasewood	051431	22	C	05/20-06/30	92	27810	28	03/25-06/15 1 in 2	I	
			320	C	07/01-12/06	92		1539			
06038	Little Spring Creek	051431	250	C	05/01-06/15	90	14877	340	03/15-06/01 2 in 3	I	
			72	C	06/16-10/31	90		294			
			250	C	11/01-11/15	90		111			
			250	C	12/01-12/25	90		185			
06039	Hammond Draw	051414	200	C	04/16-05/17	100	7098	210	03/15-06/01 1 in 2	M	
06040	Upper Fletcher Draw	051431	180	C	06/16-10/31	62	6250	506	04/20-07/15 1 in 2	I	
06041	Lower Fletcher Draw	051414	130	C	03/22-04/21	50	9687	66	03/15-06/01 2 in 3	M	
			100	C	04/21-05/19	100		95			
			130	C	12/01-02/20	100		350			
06042	Boise Creek	051454	2400	S	04/20-05/19	100	8247	474	03/16-06/01 1 in 2	M	
			400	S	05/20-06/06	100		47			
			2500	S	11/25-12/20	100		427			
			360	S	11/25-12/20	100		62			
06301	Cottonwood Draw	051442	56	C	06/01-09/30	8	200	18	04/10-06/20 1 in 3	C	
06302	Roundtop	051435	215	C	05/16-11/07	48	7162	597	04/20-07/15 1 in 2	I	
06303	Mud Springs Draw	051436	156	C	06/01-10/30	5	549	39	04/10-10/15 1 in 3	C	
06304	Basin Springs	051437	575	C	05/01-10/31	35	6225	1217	04/01-07/15 1 in 3	I	
06305	Marthas Hole	051438	4	H	06/15-09/15	50	3871	6	04/10-07/15 1 in 2	M	
			60	C	06/20-07/31	50		41			
			135	C	08/01-10/15	50		169			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
			49	C	06/15-10/15	50		99			
			8	H	07/15-10/15	50		12			
06306	Turner Creek	051439	84	C	05/01-10/31	77	3749	391	04/10-07/15 1 in 2	I	
06307	K Ranch	051440	300	C	03/01-03/15	50	43242	74	03/15-06/01 1 in 4	I	A
			100	C	03/01-04/30	50		100			
			300	C	03/16-04/30	50		227			
			100	C	03/16-04/30	50		76			
			200	C	05/01-05/15	50		49			
			300	C	05/01-05/31	50		153			
			200	C	05/16-05/31	50		53			
			125	C	06/01-06/30	50		62			
			375	C	06/01-06/30	50		185			
			500	C	07/01-08/15	50		378			
			500	C	08/16-10/31	50		633			
			215	Y	06/01-06/30	50		106			
			215	Y	06/01-06/30	50		106			
			430	Y	07/01-07/30	50		212			
			430	Y	08/01-09/30	50		431			
			100	C	11/01-11/30	50		49			
			300	C	11/01-11/30	50		148			
			100	C	11/01-11/30	50		49			
			200	C	12/01-02/28	50		296			
			200	C	12/01-02/28	50		296			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06308	Artesia Allotment	051441	150	S	12/10-02/28	100	40099	80	03/15-06/01 1 in 2	I	A
			150	S	03/01-03/26	100		26			
			150	S	03/27-05/30	100		64			
			1400	S	11/28-02/02	100		617			
			1400	S	02/03-02/29	100		249			
			1400	S	03/01-03/31	100		285			
			2000	S	12/11-01/20	100		539			
			2000	S	01/21-02/29	100		526			
			2000	S	03/01-03/10	100		132			
			2000	S	03/11-03/31	100		276			
			1200	S	04/05-05/20	100		363			
			2000	S	04/04-04/11	100		105			
			2000	S	04/12-04/25	100		184			
			1600	S	04/26-05/10	100		158			
			600	S	05/11-05/20	100		40			
06312	Raven Ridge	051441	1200	S	11/20-02/28	100	8466	797	03/15-06/01 1 in 2	I	A
06313	Coal Oil	051433	700	S	03/01-04/15	56	4456	119	03/05-06/01 2 in 3	C	
			700	S	12/16-02/29	56		196			
06314	Raven Park	051466	1400	S	03/01-04/06	100	16522	341	03/05-06/01 2 in 3	I	
			1400	S	11/20-02/29	100		939			
06316	Spooky Mountain	051416	650	S	12/01-02/29	96	31082	373	03/15-06/01 2 in 3	I	
			650	S	03/01-04/30	96		250			
			2000	S	11/20-12/29	96		505			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
			2000	S	12/30-02/29	96		783			
			2000	S	03/01-05/09	96		884			
06320	Red Wash	051444	1692	S	03/01-04/12	100	8724	478	03/15-06/01 Yearly	I	
			1692	S	01/25-02/29	100		401			
06321	Rock Wall Draw	051445	2000	S	04/08-04/19	24	1160	38	03/15-06/01 Yearly	C	
			2000	S	12/09-12/20	24		38			
06322	Skull Creek	051484	61	C	04/01-05/20	50	8108	50	04/01-06/20 2 in 3	C	
			73	C	10/01-02/29	50		182			
06323	Wolf Creek	051447	800	C	03/01-01/06	54	54174	4431	03/15-06/01 1 in 2 04/01-06/20 1 in 2 04/20-07/15 1 in 3	I	A
			25	H	03/01-01/14	14		37			
06324	Massadona	051447	350	C	03/01-04/30	75	8478	526	03/05-06/01 1 in 2	I	A
			650	C	12/01-01/03	75		545			
		051448	610	S	04/16-05/09	100		96			
06326	Elk Springs	051458	530	S	10/25-11/30	76	19673	98	03/06-06/20 1 in 3	I	
			1730	S	11/20-01/07	76		424			
			1700	S	11/20-12/15	76		221			
			1550	S	03/01-04/10	76		318			
			1550	S	04/11-05/25	76		349			
			1700	S	03/01-04/10	76		348			
			710	S	04/11-05/25	76		160			
			1150	S	04/11-06/10	76		351			
06329	Winter Valley Gulch	051430	18	C	05/16-10/12	53	1630	47	03/20-06/20 1 in 2	C	

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06330	Upper Coal Creek	051485	2000	S	03/01-04/14	81	5355	479	03/15-06/01 1 in 2	I	
			2000	S	01/23-02/29	81		405			
06332	Horse Draw	051444	1600	S	12/09-01/24	100	15330	495	03/15-06/01 1 in 2	I	A
		051447	350	C	03/01-04/30	95		667			
			503	C	01/04-02/28	95		880			
06333	Pinyon Ridge	051431	50	C	04/01-06/30	100	15511	150	03/05-06/01 1 in 2	I	
			75	C	05/01-06/30	100		150			
			100	C	04/16-06/30	100		250			
			75	C	05/01-06/30	100		150			
06334	Coal Reef	051431	200	C	12/26-01/24	100	3837	197	03/15-06/01 Yearly	C	
06335	Hall Draw	051448	1950	S	04/16-05/09	100	9070	308	03/05-06/01 1 in 2	C	
			1350	S	05/10-05/23	100		124			
			1350	S	05/24-05/30	100		62			
06338	Johnson-Trujillo	051455	1999	S	03/01-04/25	100	20930	736	03/20-06/10 1 in 2	M	
			1300	S	04/16-04/24	100		77			
			2212	S	12/07-02/29	100		1236			
06340	Shavetail Gulch	051482	1604	S	03/28-05/17	96	7389	516	03/20-06/10 1 in 2	I	
			1604	S	11/27-12/30	96		344			
06341	Banta	051453	22	S	09/20-02/28	90	630	21	03/20-06/10 Yearly	C	
			22	S	03/01-03/20	90		3			
06342	Douglas Creek	051455	2500	S	04/16-04/25	100	5518	164	03/20-06/10 1 in 2	M	
			2500	S	12/01-01/08	100		641			
06343	Banta Flats	051455	3212	S	12/07-02/29	100	17871	1795	03/20-06/10 1 in 2	M	

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06346	Twin Buttes	051456	480	C	03/01-05/31	100	134602	1452	03/15-06/10 1 in 2 04/01-06/25 1 in 2 04/25-07/15 1 in 2	I	A
			433	C	03/01-05/31	100		1310			
			97	C	03/01-05/31	100		293			
			191	C	03/01-05/31	100		578			
			758	C	06/01-10/31	34		1296			
			547	C	06/01-10/31	40		1101			
			67	C	06/01-10/31	34		115			
			480	C	11/01-02/29	100		1909			
			433	C	11/01-02/29	100		1723			
			97	C	11/01-02/29	100		386			
			191	C	11/01-02/29	100		760			
			68	C	03/01-05/31	47		97			
		051462	39	C	03/01-05/30	100		117			
			51	C	11/01-02/28	100		201			
		051463	38	C	03/01-05/30	64		73			
			49	C	11/01-02/28	64		124			
06349	Cathedral Bluffs	051452	500	C	03/01-03/30	100	90874	493		I	A
			250	C	04/01-05/30	93		459			
			324	C	04/01-06/30	56		543			
			334	C	04/01-06/30	45		450			
			50	C	05/01-05/30	56		28			
			353	C	08/15-11/15	41		443			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
			568	C	07/01-09/30	35		601			
			522	C	09/01-11/15	41		535			
			227	C	11/16-11/30	56		63			
			342	C	11/16-11/30	45		76			
			450	C	12/01-01/31	100		917			
			217	C	12/01-01/31	93		411			
			500	C	02/01-02/28	100		460			
06354	Bull Draw	051459	43	C	03/01-03/30	100	9778	42	03/20-06/15 2 in 3 03/20-06/15 1 in 2 04/25-07/15 1 in 2	I	
			42	C	11/16-02/28	100		145			
06356	East Douglas Creek	051459	150	C	03/01-06/30	100	36071	602		I	
			50	C	06/15-06/30	68		18			
			275	C	07/01-10/15	68		658			
			75	C	10/16-11/15	68		52			
			50	C	11/01-11/16	100		26			
			128	C	11/16-02/28	100		442			
06357	Evacuation Creek	051460	578	C	03/01-04/30	56	59743	649	03/25-06/20 1 in 2 04/25-07/25 1 in 2	I	
			528	C	05/01-06/06	56		360			
			528	C	06/16-10/15	60		1271			
			578	C	10/16-02/29	56		1458			
			50	C	05/01-10/15	100		276			
06361	Foundation Creek	051462	71	C	06/01-10/31	44	3839	157	03/25-06/15 1 in 2	I	

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06362	Red Rock	051463	58	C	06/01-10/30	48	5864	139		I	
06367	Cathedral Creek	051457	65	C	05/01-12/31	100	9990	524	04/01-06/25 1 in 2 04/25-07/15 1 in 2	I	
06371	Red Rocks	051401	65	Y	06/01-08/15	12	895	19	03/15-06/01 Yearly	M	
			65	Y	08/16-10/04	61		65			
06372	Stuntz Ridge	051434	60	C	06/01-10/10	56	1174	146		M	
			21	C	06/01-10/10	56		51			
06373	Miller Creek	051458	1550	S	01/08-02/28	67	2859	355		C	
06375	Cassion	051450	61	C	09/01-11/15	51	1265	78		C	
06600	Mc Andrews Gulch	051465	295	C	03/01-06/15	74	12785	768	03/15-06/01 1 in 2	I	A
			295	C	11/01-02/29	74		868			
06603	Little Toms Draw	051466	1650	S	03/01-05/05	80	14100	573	03/15-06/01 1 in 2	I	
			1650	S	12/01-02/29	80		790			
		051488	59	C	05/01-05/31	100		60			
06604	West Shutta	051468	564	S	04/24-06/21	94	2319	206	03/15-06/01 1 in 3	M	
			600	S	11/20-01/15	94		211			
06605	Keystone	051488	55	C	06/01-10/10	100	27871	239	03/15-06/01 1 in 3 03/20-06/15 1 in 3 04/05-07/01 1 in 3	I	
		051489	439	C	03/01-06/15	64		988			
			189	C	06/16-11/15	64		608			
			227	C	06/16-11/15	64		731			
			23	C	06/16-11/15	64		74			
			570	C	11/16-02/28	64		1259			

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06607	N. Fork Price Creek	051469	36	C	05/15-10/14	50	750	91	04/05-06/25 Yearly	M	
06608	S. Fork Price Creek	051471	313	C	06/01-11/30	13	2266	245	04/15-07/01 1 in 2	M	
06609	Chokecherry	051470	487	S	06/01-10/31	39	1423	191	04/15-07/01 1 in 2	C	
06610	Gower Gulch	051473	92	C	06/01-09/30	61	2074	225	04/15-07/01 2 in 3	C	
06611	South Gower Gulch	051470	29	C	05/16-08/31	100	657	103		C	
06612	Blacks Gulch	051472	510	C	04/15-12/31	60	24770	2626	03/15-06/10 1 in 3 04/15-07/10 1 in 3	I	A
06613	Upper Smith Gulch	051417	470	C	05/01-06/30	73	8657	688	04/15-06/28 1 in 4	M	
			144	C	05/01-06/30	73		211			
06614	West Strawberry	051473	44	C	05/16-09/15	34	390	60	04/15-07/01 Yearly	C	
06615	Strawberry Peak	051419	50	C	07/01-10/31	30	900	61	04/15-07/10 1 in 2	C	
06616	Goff Camp Gulch	051473	24	C	05/16-09/15	100	2074	97	04/05-07/01 Yearly	C	
		051474	50	C	05/16-10/15	100		252			
06617	Cave Gulch	051419	200	C	07/01-10/10	75	1675	503	04/05-07/15 2 in 3	C	
06618	Cabin Gulch	051471	173	C	05/23-09/30	10	785	75	04/05-07/15 2 in 3	C	
06619	Villa Ind.	051476	62	C	05/16-07/16	50	620	63	04/05-07/01 1 in 2	C	
06620	Jordon Gulch	051406	71	C	08/16-10/15	100	6350	142	04/15-07/15 1 in 2	I	
		051477	52	C	05/16-11/30	80		272			
06621	Lower Smith Gulch	051413	224	C	05/08-05/25	90	8570	119	03/20-06/15 3 in 4	I	
			100	C	11/16-01/15	90		180			
			100	C	12/16-01/15	90		92			
06622	Windy Gulch	051406	38	C	05/01-05/30	100	2367	37	03/20-06/15 3 in 4	C	
		051413	50	C	05/06-06/05	100		51			

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
			25	C	11/10-01/09	100		50			
06623	Anderson Ind.	051406	100	C	05/01-10/15	4	879	22	03/20-06/15 1 in 2	C	
06624	Willow Springs	051478	180	C	05/01-10/31	10	750	109	03/20-06/15 1 in 2	M	
06625	Smith-Crawford	051479	286	C	05/15-06/30	50	10767	221	03/20-07/11 1 in 2	I	A
			187	C	07/01-09/30	50		283			
			45	C	07/01-09/30	70		95			
			56	C	05/15-09/30	50		128			
			130	C	10/01-10/30	50		64			
		051480	500	C	05/15-06/30	50		386			
			159	C	07/01-09/30	50		240			
			68	C	07/01-09/30	70		144			
			56	C	05/15-09/30	50		128			
			310	C	10/01-11/15	50		234			
06626	Isolated Tract	051481	72	C	06/16-10/15	12	450	35	03/20-06/15 Yearly	C	
06627	Ryan Draw	051481	100	C	05/16-06/30	40	1229	60	03/20-06/15 1 in 2	M	
06628	East Strawberry	051468	167	C	05/01-05/30	49	1147	81		M	
			167	C	11/01-11/30	49		81			
06629	Devil's Hole	051475	22	C	06/15-09/14	30	120	20		C	
06630	Byerly	051490	2	C	05/01-07/15	100	40	5		C	
06699											
06800	Kourlis H.	051500	2500	S	06/01-10/20	7	574	163	03/01-06/01 Yearly	M	
06802	Thornburgh	051502	400	S	05/01-06/15	59	497	71	03/01-06/01 Yearly 03/01-06/01 Yearly	C	

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
			459	S	09/15-10/14	59		54			
06803	Zingheim & Jones	051503	300	S	05/01-06/24	10	790	11	03/01-06/01 Yearly	M	
			2000	S	11/01-11/16	10		21			
			800	S	06/20-06/26	19		7			
			800	S	09/11-09/17	19		7			
			1098	S	06/25-10/31	19		177			
06804	LO7 Hill	051504	1000	S	06/01-11/25	41	2120	480	03/01-06/01 Yearly	M	
06805	Theos M.	051505	2250	S	05/15-11/07	3	421	79	03/01-06/01 Yearly	C	
06806	Rosenlund	051506	800	S	06/16-09/30	31	872	175	03/01-06/01 Yearly	C	
06807	Sheridan F & I	051507	300	C	05/01-11/15	17	993	334	03/01-06/01 Yearly	C	
06808	Rattlesnake Mesa	051508	104	C	06/01-12/31	30	1360	220	03/01-06/01 Yearly	C	
			200	S	06/01-12/31	30		85			
06809	Rienau B.	051509	40	C	06/20-07/19	100	240	39	03/01-06/01 Yearly	C	
			40	C	10/01-10/15	100		20			
06810	Kritsas	051510	30	C	05/27-10/31	99	614	154	03/01-06/01 Yearly	C	
06811	Moore W. C.	051511	325	C	06/15-08/03	2	40	11	03/01-06/01 Yearly	C	
06812	Theos T.	051512	2600	S	05/01-11/25	5	566	179	03/01-06/01 Yearly	M	
06813	Theos N.	051513	2000	S	06/01-07/01	16	1543	65	03/01-06/01 Yearly	M	
			2000	S	09/16-11/20	16		139			
			1500	S	06/01-11/23	16		278			
06814	Smith C.	051514	43	C	04/20-10/31	50	341	138	03/01-06/01 Yearly	C	
06815	Brown P. & D.	051515	30	H	06/01-10/27	17	149	25	03/01-06/01 Yearly	C	
06817	South Fork	051517	400	C	05/15-10/25	19	919	410	03/01-06/01 Yearly	M	

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
06818	J. Dodo	051518	100	C	06/15-11/08	9	120	43	03/01-06/01 Yearly	M	
06819	Big Beaver	051519	95	C	06/10-09/15	7	232	21		C	
			100	Y	06/10-09/15	9		29			
06820	Oak Ridge SWA	051494	315	C	05/15-07/01	11	1600	55		M	
06821	Wilber G.	051521	250	C	06/01-10/31	23	760	289	03/01-06/01 Yearly	I	
06823	Raley R.	051523	30	C	05/01-10/26	17	120	30	03/01-06/01 Yearly	C	
06824	Amick	051524	100	C	05/15-06/30	84	758	130	03/01-06/01 Yearly	M	
			75	C	09/01-10/30	84		124			
06825	Lagrange R.	051525	40	C	05/01-12/01	88	680	249	03/01-06/01 Yearly	M	
06826	Barney	051526	5	C	05/01-10/31	23	40	7	03/01-06/01 Yearly	C	
06827	Dorrell C.	051527	50	C	05/01-10/31	11	197	33	03/01-06/01 Yearly	C	
06828	Sprod R.	051528	25	C	09/01-11/15	39	320	24	03/01-06/01 Yearly	C	
06829	Dry Creek	051529	1000	S	05/01-11/17	15	920	198	03/01-06/01 Yearly	C	
06830	Jensen W.	051530	1400	S	06/01-11/01	22	929	312	03/01-06/01 Yearly	C	
06831	Jolley H.	051531	1500	S	05/01-07/14	35	2240	259	03/01-06/01 Yearly	M	
			1500	S	09/01-10/13	35		149			
		051533	750	S	05/01-07/15	29		109			
			750	S	09/01-10/15	29		64			
06832	Mace Cox Et Al	051532	154	C	05/15-10/30	12	520	103	03/01-06/01 Yearly	M	
06833	Jewell Et Al	051533	400	S	06/01-07/31	77	280	124	03/01-06/01 Yearly	C	
06834	Robinson J.	051534	1000	S	05/15-06/30	40	640	124	03/01-06/01 Yearly	C	
			1000	S	09/15-11/16	40		166			
06835	Woodward T.	051535	200	C	05/01-10/31	12	1080	145	03/01-06/01 Yearly	C	

Table D-1 continued

Allotment		Permit Nr.	Livestock		Period of Use	Percent Public Land	Public Acres	Author-ized Use (AUM)	Minimum Rest Requirement	Mgmt Cat.	AMP Stat.
Nr.	Name		Nr.	Kind							
			1500	S	05/01-10/31	12		218			
06836	Wilcoxson F.	051536	255	S	06/01-10/24	11	200	27	03/01-06/01 Yearly	C	
06837	Big Mountain	051537	925	S	09/10-09/17	100	347	49	03/01-06/01 Yearly	C	
06838		051516	93	C	06/01-06/15	100		46			
			93	C	10/01-10/12	100		37			

APPENDIX E
MANAGEMENT OF WILDERNESS STUDY AREAS IF NOT DESIGNATED BY CONGRESS AS WILDERNESS

This appendix describes management of Bull Canyon, Skull Creek, and Willow Creek Wilderness Study Areas (WSAs) should they *NOT* be designated as wilderness (Table E-1). It also summarizes management of Black Mountain, Windy Gulch, and Oil Spring Mountain WSAs under nonwilderness management as described throughout Chapter 2 (Table E-2).

Table E-1. Management of Bull Canyon, Willow Creek, Skull Creek WSAs If Not Designated as Wilderness

Alternative A	Alternative B	Alternative C	Alternative D
		General Management	
WSA management would no longer apply. These lands would be managed as nonwilderness, and no special management designation would be made.	WSA management would no longer apply. The acres recommended for wilderness designation (totaling 40,730 Colorado acres) would be designated as the Blue Mountain ACEC.	WSA management would no longer apply. The three areas recommended for wilderness designation (totaling 40,730 Colorado acres) would be designated as the Blue Mountain ACEC.	WSA management would no longer apply. The three areas recommended for wilderness designation (totaling 40,730 acres) would be designated as the Blue Mountain ACEC.
Individual activity plans would be prepared following publication of the RMP.	A recreation activity management plan (RAMP) would be prepared following publication of the RMP.	Individual activity plans would be prepared following publication of the RMP.	Site-specific management for these WSAs would be included in the Blue Mountain/Wolf Creek integrated activity plan (IAP) - see IAP Section, this chapter.
		Specific Management	
Leasable Minerals: All three areas would be available for leasing subject to surface stipulations.	Leasable Minerals: The ACEC would be available for leasing subject to surface stipulations.	Leasable Minerals: An NSO stipulation would be developed for the ACEC. The ACEC would be available for leasing subject to the NSO stipulation.	Leasable Minerals: An NSO stipulation would be developed for the ACEC. The ACEC would be available for leasing subject to the NSO stipulation.
Mineral Material Sales: All three areas would be available subject to surface stipulations.	Mineral Material Sales: The SRMA would be available subject to surface stipulations.	Mineral Material Sales: The ACEC would be closed to mineral material sales.	Mineral Material Sales: The ACEC would be closed to mineral material sales.
Locatable Minerals: All three areas would be open to location.	Locatable Minerals: The SRMA would be open to location.	Locatable Minerals: The ACEC would be open to mineral location.	Locatable Minerals: The ACEC would be open to mineral location.
Vegetation: The desired plant community (DPC) would be specified in individual activity plans.	Vegetation: The desired plant community (DPC) would be specified in individual activity plans.	Vegetation: The desired plant community (DPC) would be specified in individual activity plans.	Vegetation: The desired plant community (DPC) would be specified in the Blue Mountain/Wolf Creek IAP.
Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.	Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.	Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.	Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.

Table E-1 continued

Alternative A	Alternative B	Alternative C	Alternative D
Livestock Grazing: Existing use would continue pending preparation of individual activity plans.	Livestock Grazing: Existing use would continue pending preparation of individual activity plans.	Livestock Grazing: Existing use would continue pending preparation of individual activity plans.	Livestock Grazing: Existing use would continue pending preparation of the Blue Mountain/Wolf Creek IAP.
Wildlife: Site-specific projects would be specified in individual activity plans based on objectives in the RMP. Special surface stipulations (Appendix B) would apply.	Wildlife: Site-specific projects would be specified in individual activity plans based on objectives in the RMP. Special surface stipulations (Appendix B) would apply.	Wildlife: Site-specific projects would be specified in individual activity plans based on objectives in the RMP. Special surface stipulations (Appendix B) would apply.	Wildlife: Site-specific projects would be specified in the Blue Mountain/Wolf Creek IAP based on objectives in the RMP. Special surface stipulations (Appendix B) would apply.
Recreation: No RAMPs would be prepared. The areas would be managed to maintain a semi-primitive motorized recreational setting.	Recreation: A RAMP would be prepared for the SRMA. The SRMA would be managed to preserve a semi-primitive motorized recreational setting.	Recreation: No RAMP would be prepared. The ACEC would be managed to preserve a semi-primitive nonmotorized recreational setting. Recreational facilities would be constructed outside the ACEC.	Recreation: Specific management would be specified in the Blue Mountain/Wolf Creek IAP. The ACEC would be managed as semi-primitive nonmotorized. Recreational facilities would be constructed outside the ACEC.
Vehicle Management: All three areas would be open to vehicle travel with no restrictions.	Vehicle Management: Vehicles would be prohibited off roads and trails within the SRMA; they would be allowed on existing roads and trails.	Vehicle Management: The ACEC would be closed to vehicles except for administrative purposes and grandfathered travel on existing roads and trails.	Vehicle Management: The ACEC would be closed to vehicles except for administrative purposes and grandfathered travel on existing roads and trails.
VRM: The areas would be managed according to VRM Class III objectives.	VRM: The SRMA would be managed according to VRM Class III objectives.	VRM: The entire ACEC would be managed according to VRM Class II objectives.	VRM: The entire SRMA would be managed according to VRM Class II objectives.
Cultural Resources: Site-specific management of cultural sites would be outlined in cultural resource management plans (CRMPs).	Cultural Resources: Site-specific management of cultural sites would be outlined in cultural resource management plans (CRMPs).	Cultural Resources: Site-specific management of cultural sites would be outlined in cultural resource management plans (CRMPs).	Cultural Resources: Site-specific management of cultural sites would be outlined in the Blue Mountain/Wolf Creek IAP.
Land Use Authorizations: All three areas would be open to public utilities.	Land Use Authorizations: The SRMA would be open to public utilities.	Land Use Authorizations: The ACEC would be an avoidance area for public utilities.	Land Use Authorizations: The ACEC would be an avoidance area for public utilities.
Access: No access would be acquired.	Access: Access would be acquired to the SRMA.	Access: Access would be acquired to the ACEC.	Access: Access would be acquired to the ACEC.

Table E-2. Management of Black Mountain, Windy Gulch, Oil Spring Mountain WSAs (as Described in Chapter 2)

Alternative A	Alternative B	Alternative C	Alternative D
General Management			
WSA management would no longer apply. These lands would be managed as non-wilderness, and no special management designation would be made.	WSA management would no longer apply. These lands would be managed as non-wilderness, and no special management designation would be made.	WSA management would no longer apply. Black Mountain and Windy Gulch areas would be designated as an SRMA (22,460 acres). Oil Spring Mountain (18,260 acres) would be designated as an ACEC.	WSA management would no longer apply. Black Mountain and Windy Gulch areas would receive no special management designation. Oil Spring Mountain (18,260 acres would be designated as an ACEC.
Individual activity plans would be prepared.	Individual activity plans would be prepared.	Individual activity plans would be prepared.	Site-specific management for Black Mountain and Windy Gulch WSAs would be included in the Crooked Wash integrated activity plan (IAP); site specific management for Oil Spring Mountain would be included in the Douglas Creek IAP (see IAP Section, Chapter 2).
Specific Management			
Leasable Minerals: All three areas would be available for leasing under standard lease terms and special surface stipulations where applicable (see Oil and Gas Section, Chapter 2, and Appendixes B and C).	Leasable Minerals: All three areas would be available for leasing under standard lease terms and with special surface stipulations where applicable (see Appendixes B and C).	Leasable Minerals: All three areas would be available for leasing with surface stipulations (see Appendixes B and C). The spruce-fir on Oil Spring Mountain would be leased with a no surface occupancy stipulation.	Leasable Minerals: All three areas would be available for leasing with surface stipulations (see Appendixes B and C). The spruce-fir on Oil Spring Mountain would be leased with a no surface occupancy stipulation.
Mineral Material Sales: All three areas would be available subject to surface stipulations.	Mineral Material Sales: All three areas would be available subject to surface stipulations.	Mineral Material Sales: All three areas would be available subject to surface stipulations.	Mineral Material Sales: All three areas would be available subject to surface stipulations.
Locatable Minerals: All three areas would be open to mineral location.	Locatable Minerals: All three areas would be open to mineral location.	Locatable Minerals: All three areas would be open to mineral location.	Locatable Minerals: All three areas would be open to mineral location.
Vegetation: The desired plant community (DPC) would be specified in individual activity plans. Surface stipulations (Appendix B) would apply.	Vegetation: The desired plant community (DPC) would be specified in individual activity plans. Surface stipulations (Appendix B) would apply.	Vegetation: The desired plant community (DPC) would be specified in individual activity plans. Surface stipulations (Appendix B) would apply.	Vegetation: The desired plant community (DPC) would be specified in applicable IAPs based on objectives in this RMP (see Chapter 2, IAP Section for objectives). Surface stipulations (Appendix B) would apply.
Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.	Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.	Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.	Forest Lands and Woodlands: Unavailable for commercial sales and firewood permits.
Livestock Grazing: Existing use would continue pending preparation of individual activity plans.	Livestock Grazing: Existing use would continue pending preparation of individual activity plans.	Livestock Grazing: Existing use would continue pending preparation of individual activity plans.	Livestock Grazing: Existing AUMs would continue pending preparation of the Crooked Wash and Douglas Creek IAPS.

Table E-2 continued

Alternative A	Alternative B	Alternative C	Alternative D
Wildlife: Wildlife would be managed according to wildlife objectives in the Wildlife Section, Chapter 2. Site specific management for Black Mountain and Windy Gulch would be outlined in an individual activity plan for Piceance Basin. Surface stipulations (Appendix B) would apply.	Wildlife: Wildlife would be managed according to wildlife objectives in the Wildlife Section, Chapter 2. Site specific management for Black Mountain and Windy Gulch would be outlined in an individual activity plan for Piceance Basin. Surface stipulations (Appendix B) would apply.	Wildlife: Wildlife would be managed according to wildlife objectives in the Wildlife Section, Chapter 2. Site specific management for Black Mountain and Windy Gulch would be outlined in an individual activity plan for Piceance Basin. Surface stipulations (Appendix B) would apply.	Wildlife: Wildlife would be managed according to wildlife objectives in the Wildlife Section, Chapter 2. Site specific management for Black Mountain and Windy Gulch would be outlined in applicable IAPs. Surface stipulations (Appendix B) would apply.
Recreation. All three areas would be managed to maintain a semi-primitive motorized recreational setting.	Recreation. All three areas would be managed to maintain a semi-primitive motorized recreational setting.	Recreation. Black Mountain and Windy Gulch SRMA would be managed to maintain a semi-primitive nonmotorized recreational setting. A semi-primitive motorized recreational setting would be maintained in Oil Spring Mountain ACEC.	Recreation. All three areas would be managed to maintain a semi-primitive motorized recreational setting.
Vehicle Management: All three areas would be open to motorized vehicle travel with no restrictions.	Vehicle Management: Motorized vehicles would be allowed only on existing roads and trails.	Vehicle Management: Motorized vehicles would be allowed only on designated roads and trails in Black Mountain and Windy Gulch SRMA. Oil Spring Mountain ACEC would be closed to motorized vehicles.	Vehicle Management: Motorized vehicles would be allowed only on designated roads and trails in all three areas.
VRM: All three areas would be managed according to VRM Class III Objectives.	VRM: All three areas would be managed according to VRM Class III Objectives.	VRM: All three areas would be managed according to VRM Class II Objectives.	VRM: Black Mountain and Windy Gulch areas would be managed as VRM Class III. Oil Spring Mountain would be managed as VRM Class II.
Land Use Authorizations: All three areas would be open to public utilities subject to surface stipulations (see Appendix B).	Land Use Authorizations: All three areas would be open to public utilities subject to surface stipulations (see Appendix B).	Land Use Authorizations: All three areas would be open to public utilities subject to surface stipulations.	Land Use Authorizations: All three areas would be open to public utilities subject to surface stipulations.
Access: Access would not be acquired in any of the areas.	Access: Access would be acquired into the Windy Gulch area.	Access: Access would be acquired into the Windy Gulch area.	Access would be acquired into the Windy Gulch area.

APPENDIX F
MANAGEMENT OF
AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECs)

This appendix outlines management for ACECs under the various alternatives. All designated ACECs would be subject to surface stipulations listed in Appendix B. It should be noted that Bull Canyon, Willow Creek, and Skull Creek WSAs would be designated as the Blue Mountain ACEC under Alternatives C and D if they are not designated by Congress as wilderness. The Blue Mountain ACEC does not appear in this table as it has been assumed throughout this RMP EIS that these WSAs would be designated as wilderness and not as the Blue Mountain ACEC. Appendix E outlines management of WSAs should they not be designated as wilderness.

Table F-1. Management of Existing and Proposed ACECs by Alternative

Existing or Proposed ACEC	Management			
	Alternative A	Alternative B	Alternative C	Alternative D
Deer Gulch Designated ACEC	Oil and Gas Leasing: Open with standard lease terms and surface stipulations listed in Appendix B. Mineral Materials: Open with surface stipulations (Appendix B). Locatable Minerals: Closed to mineral entry by oil shale withdrawal. Recreation: Semi-primitive motorized. Vehicle Travel: Existing roads and trails (see Motorized Vehicle Travel Section, Chap 2). VRM: Class III Public Utilities: Avoid mapped cultural, fossil, plant and animal sites/habitat. Acquisition/Disposal: Retain federal land in federal ownership. Access: None identified. Withdrawals: Keep oil shale withdrawal. No new withdrawals proposed.	Oil and Gas Leasing: Open with standard lease terms and surface stipulations listed in Appendix B. Mineral Materials: Open with surface stipulations (Appendix B). Locatable Minerals: Close special status plant habitat with protective withdrawal (oil shale withdrawal would be revoked). Recreation: Semi-primitive motorized. Vehicle Travel: Existing roads and trails. VRM: Class III Public Utilities: Avoid mapped cultural, fossil, plant and animal sites/habitat. Acquisition/Disposal: Retain federal land in federal ownership. Access: None identified. Withdrawals: Revoke oil shale withdrawal. Withdraw special status plant habitat.	Oil and Gas Leasing: Open to leasing with standard lease terms and surface stipulations listed in Appendix B. Mineral Materials: Open with surface stipulations (Appendix B). Locatable Minerals: Closed to mineral entry by oil shale withdrawal. Recreation: Semi-primitive nonmotorized. Vehicle Travel: Designated roads and trails. Rehabilitate roads and trails not designated. VRM: Class II. Public Utilities: Avoid mapped cultural, fossil, plant and animal sites/habitat Acquisition/Disposal: Retain federal land in federal ownership. Access: None identified. Withdrawals: Keep oil shale withdrawal. No new withdrawals proposed.	Oil and Gas Leasing: Open with standard lease terms and surface stipulations listed in Appendix B. Mineral Materials: Open with surface stipulations (Appendix B). Locatable Minerals: Closed to mineral entry by oil shale withdrawal. Recreation: Semi-primitive motorized. Vehicle Travel: Designated roads and trails. Rehabilitate roads and trails not designated. VRM: Class II Public Utilities: Avoid mapped cultural, fossil, plant and animal sites/habitat. Acquisition/Disposal: Retain federal land in federal ownership. Access: None identified. Withdrawals: Keep oil shale withdrawal. No new withdrawals proposed.
Lower Greasewood Creek Designated ACEC	Same as Deer Gulch ACEC except: VRM: Class IV	Same as Deer Gulch ACEC.	Same as Deer Gulch ACEC.	Same as Deer Gulch ACEC.

Table F-1 continued

Existing or Proposed ACEC	Management			
	Alternative A	Alternative B	Alternative C	Alternative D
South Cathedral Bluffs Designated ACEC	Same as Deer Gulch ACEC	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire state or private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation. Acquisition/Disposal: Acquire state or private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation. Acquisition/Disposal: Acquire state or private land occupied by special status plant species.
South Cathedral Bluffs ACEC Proposed Addition	N/A	Same as Deer Gulch ACEC except: VRM: Class II. Acquisition/Disposal: Acquire private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation. Acquisition/Disposal: Acquire private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation. Acquisition/Disposal: Acquire private land occupied by special status plant species.
Dudley Bluffs Designated ACEC	Same as Deer Gulch ACEC except: VRM: Class IV	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire private land occupied by special status plant species.
Yanks Gulch/ Upper Greasewood Creek Designated ACEC	Same as Deer Gulch ACEC except: VRM: Class IV	Same as Deer Gulch ACEC except: VRM: Class IV Acquisition/Disposal: Acquire private land occupied by special status plant species	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire private land occupied by special status plant species	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire private land occupied by special status plant species
Raven Ridge Designated ACEC	Same as Deer Gulch ACEC except: Oil and Gas: Open with NSO entire ACEC. Withdrawals: No existing withdrawal. None proposed.	Same as Deer Gulch ACEC except: Oil and Gas: Open with NSO stipulation entire ACEC and with other surface stipulations. Locatable Minerals: Close special status plant habitat to mineral entry. Withdrawals: No existing withdrawals. Withdraw entire ACEC. Acquisition/Disposal: Acquire private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas: Open with NSO stipulation entire ACEC and with other surface stipulations. Locatable Minerals: Close special status plant habitat to mineral entry. Withdrawals: No existing withdrawals. Withdraw entire ACEC. Acquisition/Disposal: Acquire private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas: Open with NSO stipulation entire ACEC and with other surface stipulations. Locatable Minerals: Close special status plant habitat to mineral entry. Withdrawals: No existing withdrawals. Withdraw entire ACEC. Acquisition/Disposal: Acquire private land occupied by special status plant species.

Table F-1 continued

Existing or Proposed ACEC	Management			
	Alternative A	Alternative B	Alternative C	Alternative D
Raven Ridge ACEC - Proposed Addition	N/A	N/A	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation on entire ACEC and with other surface stipulations listed in Appendix B. Mineral Materials: Closed. Withdrawals: No existing withdrawals. Withdraw entire ACEC. Acquisition/Disposal: Acquire private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation on entire ACEC and with other surface stipulations listed in Appendix B. Mineral Materials: Closed Withdrawals: No existing withdrawals. Withdraw entire ACEC. Acquisition/Disposal: Acquire private land occupied special status plant species.
Ryan Gulch Proposed ACEC -	N/A	N/A	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire state or private land occupied by special status plant species.	Same as Deer Gulch ACEC except: Acquisition/Disposal: Acquire state or private land occupied by special status plant species.
North Cathedral Bluffs Proposed ACEC	N/A	Same as Deer Gulch Designated ACEC except: Locatable Minerals: Open with surface stipulations. Withdrawals: No existing withdrawals. None proposed.	N/A	N/A
Soldier Creek Proposed ACEC (would become part of the Douglas Creek ACEC under Alternative B)	N/A	Same as Deer Gulch Designated ACEC except: Locatable Minerals: Open with surface stipulations. Withdrawals: No existing withdrawals. None proposed.	N/A	N/A
White River Riparian Proposed ACEC	N/A	N/A	Same as Deer Gulch Designated ACEC except: Locatable Minerals: Open with surface stipulations. (Area within coal withdrawal is closed to metaliferous minerals.) Recreation: Camping only in designated sites (sites would be identified in ACEC activity plan). Access: Acquire river access (see Access section, Chap 2).Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.	Same as Deer Gulch Designated ACEC except: Locatable Minerals: Open with surface stipulations. (Area within coal withdrawal is closed to metaliferous minerals.) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.

Table F-1 continued

Existing or Proposed ACEC	Management			
	Alternative A	Alternative B	Alternative C	Alternative D
Coal Oil Rim Proposed ACEC	N/A	N/A	Same as Deer Gulch Designated ACEC except: Locatable Minerals: Open with surface stipulations. (Area within coal withdrawal is closed to metaliferous minerals.) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.	Same as Deer Gulch Designated ACEC except: Locatable Minerals: Open with surface stipulations. (Area within coal withdrawal is closed to metaliferous minerals.) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.
Moosehead Mountain Proposed ACEC	N/A	N/A	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation. Mineral Materials: Closed Locatable Minerals: Withdraw Moosehead Road Closure Area. Remainder of ACEC open with surface stipulations. Recreation: No overnight camping in road closure area. Cultural Resources: Develop a cultural resources interpretative program in cooperation with the recreation program. Withdrawals: Withdraw Moosehead Road Closure area. Vehicle Travel: Closed except for travel associated with grandfathered uses; rehabilitate existing roads and trails. Rehabilitate existing roads and trails. Public Utilities: Road closure area closed; avoid mapped cultural, fossil, plant and animal sites/habitat in remainder of ACEC.	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with NSO stipulation. Mineral Materials: Closed Locatable Minerals: Withdraw Road Moosehead Closure area. Remainder of ACEC open with surface stipulations. Recreation: No overnight camping in road closure area. Cultural Resources: Develop a cultural resources interpretative program in cooperation with the recreation program. Withdrawals: Withdraw Moosehead Road Closure area. Vehicle Travel: Road closure area closed except for travel associated with grandfathered uses; designated roads and trails in remainder of ACEC; rehabilitate nondesignated roads and trails. Public Utilities: Road closure area closed; avoid mapped cultural, fossil, plant and animal sites/habitat in remainder of ACEC.
Oil Spring Mountain Proposed ACEC	N/A	N/A	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with standard lease terms and surface stipulations (NSO spruce-fir) Locatable Minerals: Open with surface stipulations. (Area with existing withdrawal closed to metaliferous minerals.)	Same as Deer Gulch ACEC except: Oil and Gas Leasing: Open with standard lease terms and surface stipulations (NSO spruce-fir) . Locatable Minerals: Open with surface stipulations. (Area with existing withdrawal closed to metaliferous minerals.)

Table F-1 continued

Existing or Proposed ACEC	Management			
	Alternative A	Alternative B	Alternative C	Alternative D
Oil Spring Mountain Proposed ACEC continued	N/A	N/A	Mineral Material Sales: Spruce-fir area closed; remainder open with surface stipulations. Vehicle Management: Closed except for administrative purposes and grandfathered travel. Rehabilitate existing roads and trails. Public Utilities: Avoidance. Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.	Mineral Material Sales: Spruce-fir area closed; remainder open with surface stipulations. Vehicle Management: Closed except for administrative purposes and grandfathered travel on existing roads and trails. Public Utilities: Avoidance. Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.
Black's Gulch Proposed ACEC	N/A	N/A	Same as Deer Gulch except: Oil and Gas: Open with NSO on entire ACEC. Locatable Minerals: Open with surface stipulations. Withdrawals: No existing withdrawals. None proposed.	Same as Deer Gulch except: Oil and Gas: Open with NSO on entire ACEC. Locatable Minerals: Open with surface stipulations. Withdrawals: No existing withdrawals. None proposed.
Coal Draw Proposed ACEC	N/A	N/A	Same as Deer Gulch except: Oil and Gas: Open with NSO on entire ACEC. Locatable Minerals: Open with surface stipulations. (Area inside coal withdrawal is closed to metaliferous minerals.) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.	Same as Deer Gulch except: Oil and Gas: Open with NSO on entire ACEC. Locatable Minerals: Open with surface stipulations. (Area inside coal withdrawal is closed to metaliferous minerals.) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.
Texas-Missouri-Evacuation Creek Proposed ACEC	N/A	N/A	Same as Deer Gulch except: Oil and Gas: Open with NSO on entire ACEC. Locatable Minerals: Open with surface stipulations. (Area within coal withdrawal closed to metaliferous minerals) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.	N/A

Table F-1 continued

Existing or Proposed ACEC	Management			
	Alternative A	Alternative B	Alternative C	Alternative D
East Douglas Creek Proposed ACEC	N/A	N/A	Same as Deer Gulch ACEC except: Locatable Minerals: Open with surface stipulations. (Area with existing withdrawal closed to metaliferous minerals.) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.	Same as Deer Gulch ACEC except: Locatable Minerals: Open with surface stipulations.(Area with existing withdrawal closed to metaliferous minerals.) Withdrawals: Partially inside existing coal withdrawal. No new withdrawals proposed.
Duck Creek Proposed ACEC	N/A	N/A	Same as Deer Gulch ACEC except: Oil and Gas: Open with NSO on entire ACEC. Cultural Resources: Develop a cultural resources interpretive program in cooperation with the recreation program. Acquisition/Disposal: Acquire state or private land occupied special status plant species.	Same as Deer Gulch ACEC except: Oil and Gas: Open with NSO on entire ACEC. Cultural Resources: Develop a cultural resources interpretive program in cooperation with the recreation program. Acquisition/Disposal: Acquire state or private land occupied by special status plant species.

APPENDIX G
RECREATION OPPORTUNITY SPECTRUM (ROS) SETTINGS

Factor	Primitive	Semi-primitive Nonmotorized	Semi-primitive Motorized	Roaded Natural	Rural	Modern Urban
			Physical Setting			
Nearness to Distance from Roads	Greater than 3 miles from all roads	At least 1/2 mile from all roads	Near or on 4WD roads, but at least 1/2 mile from all improved roads	Near or on roads that can be driven by autos, but at least 1/2 mile from highways	On or near primary highways	On or near primary highways
Degree of Naturalness	Unmodified natural environment - at least 5,000 acres.	Largely unmodified or natural-appearing environment - at least 2,500 acres.	Largely unmodified or natural-appearing environment - at least 2,500 acres.	Resource modifications evident but harmonious with a natural-appearing environment.	Substantially modified environment having both natural and man-made features, rural or agricultural landscapes.	Naturally-appearing background in a substantially urbanized environment; exotic vegetation, buildings and powerlines may be dominant.
Amount of Developed Facilities	Very few to no facilities	A few primitive facilities such as trails and signs, but hardly noticeable.	A few primitive facilities such as trails and signs, but hardly noticeable.	Some rustic facilities, harmonious with the lands, for resource protection and visitor safety (e.g., picnic tables, pit toilets, fire grates, etc.)	Moderate number of facilities to manage use, accommodate considerable numbers of people, and for some special activities (e.g., boat launches, interpretive gazebos, etc.)	Numerous facilities to manage and accommodate intensive use; facilities for special activities are common (e.g., surfaced trails, intensively developed campgrounds,stores, etc.)
			Social Setting			
Contacts with Others	Very little contact with other persons (see 6 or fewer parties per day; less than 3 groups visible from your campsite).	Little contact with other people (see 6-15 groups per day; less than 6 groups visible from your campsite).	Moderate contact with other people (see 15 or more groups per day; see 7-14 groups away from roads and developed sites).	Moderate to high degree of contact with other people on roads (see 30 or more groups per day; see 15-29 groups away from roads).	Moderate to high degree of contact with other people on roads and trails, at developed sites, and on water surfaces, moderate away from roads, trails, developed sites, and water surfaces).	In constant contact with other people (large numbers of users on-site and in nearby areas).

Factor	Primitive	Semi-primitive Nonmotorized	Semi-primitive Motorized	Roaded Natural	Rural	Modern Urban
Evidence of Other Users	Evidence of others unnoticed when hiking through the area	Evidence of others subtly noticeable but not drawing attention when hiking through area.	Human use alterations easily noticeable but not drawing attention to visitors driving primitive roads and trails.	Human use alterations may be dominant within the area but would be subordinate or even unnoticed from main roads.	Culturally modified landscape dominates the view from main roads; people are almost continually in view.	Structures dominate the landscape and high concentrations of people are commonplace.
Managerial Setting						
Amount of on-the Ground Visitor Management	No on-site visitor management or information facilities.	A few subtle visitor management controls or visitor information facilities are present but subtle.	A few subtle visitor management controls or visitor information facilities are present, but subtle.	Visitor management controls easily noticeable but harmonize with the landscape; simple visitor information facilities are present.	On-site management controls and regulations are numerous and easy to see, more complex visitor information facilities are present.	On-site management controls and regulations are both numerous and cannot be unnoticed.
Land Management Practices	Land management practices are invisible.	Land management practices are noticeable but subtle.	Land management practices are still subtle but are easier to see from motorized vehicles.	Land uses like grazing or logging are evident but tend to fit in with the natural landscape.	Land uses are obvious and may include measures t protect soil and vegetation from recreation use impacts may also include water developments or mining.	The land is intensively managed; multiple land management practices may occur; these practices are an integral part of the setting.
Motorized Use	No motorized use allowed; area is accessible only by hiking cross-country.	No motorized use allowed; accessible by foot, mountain bikes, and nonmotorized trails.	Motorized use occurs (usually OHVs, 4WDs, motorcycles, ATVS).	OHV use and highway vehicle use occurs.	Regular highway vehicles are allowed and common.	Regular highway vehicles are dominant.

APPENDIX H
MOTORIZED VEHICLE TRAVEL MANAGEMENT

Locations of all known roads and trails in the White River Resource Area have been entered into a geographic information system (GIS) computer data base. Proposed designations as to the types of seasons of use allowed on these known roads and trails under Alternatives C and D have also been entered in the computer data base. From the data base, maps at a 1:24,000 scale (USGS 7.5 minute quadrangle) have been created and are available for public viewing in the BLM White River Resource Area Office and in the BLM Colorado State Office. It should be noted that the best available information was used in the road identification process, but road and trail locations may not be entirely accurate at this time. The computer data base will be refined during signing of roads and trails and as errors are noted. The computer data base also will be maintained as new roads are added or new road closures are made.

As explained in Chapter 2, several criteria were used in making road and trail designations and will continue to be used in the changing of road and trail designations. One of the major criteria considered in proposing road and trail closures was road densities in critical and noncritical wildlife habitat. This appendix lists current and proposed (Alternatives C and D) road densities in critical wildlife habitat (Table H-1) by 7.5-minute quadrangle and by geographic reference area (GRA). It also lists current and proposed (Alternatives C and D) road densities in noncritical wildlife habitat (Table H-2) by 7.5-minute quadrangle and GRA.

Table H-1. Road Density in Critical Wildlife Habitat

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Blue Mountain												
Hells Canyon D840108	10,133.0	28.3	1.8	27.4	1.7	(3.0)	3,765.2	9.8	1.7	8.9	1.5	(8.9)
Tanks Peak D740108	5,425.5	10.3	1.2	10.3	1.2	(0.1)	1,281.2	2.6	1.3	2.6	1.3	(0.0)
Haystack Rock D640108	16,906.9	55.1	2.1	52.9	2.0	(3.9)	6,044.7	13.7	1.5	11.5	1.2	(15.7)
Snake John Reef C140109	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Plug Hat Rock C840108	12,926.5	67.5	3.3	28.0	1.4	(58.5)	9,353.4	47.5	3.3	10.5	0.7	(78.0)
Lazy Y Point C740108	15,083.9	41.8	1.8	27.0	1.2	(35.3)	8,833.0	23.4	1.7	8.6	0.6	(63.2)

Table H-1. Continued

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Skull Creek C640108	4,117.6	8.4	1.3	8.1	1.3	(3.6)	2,713.5	4.5	1.1	4.2	1.0	(6.6)
Dinosaur B140109	2,163.4	10.8	3.2	9.4	2.8	(13.2)	1,148.8	5.8	3.3	4.4	2.5	(24.5)
GRA Total	52,721.7	192.3	2.3	131.7	1.6	(31.5)	31,893.6	103.7	2.1	45.7	0.9	(56.0)
Wolf Ridge/Red Wash												
Indian Water Canyon D540108	1,974.3	3.5	1.1	2.6	0.8	(26.6)	653.0	1.7	1.7	0.8	0.8	(54.1)
Cross Mtn. Canyon D340108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
MF Mountain C540108	17,463.8	52.2	1.9	41.4	1.5	(20.6)	16,093.7	45.9	1.8	35.2	1.4	(23.5)
Elk Springs C440108	17,156.5	51.0	1.9	43.2	1.6	(15.2)	12,887.4	37.0	1.8	29.5	1.5	(20.2)
Dinosaur B140109	2,163.4	10.8	3.2	9.4	2.8	(13.2)	1,148.8	5.8	3.3	4.4	2.5	(24.5)
Mellen Hill B840108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Rangely NE B740108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Cactus Reservoir B640108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Divide Creek B540108	11,108.0	23.4	1.4	18.6	1.1	(20.5)	9,929.1	20.2	1.3	15.4	1.0	(23.7)
Walsh Knolls A140109	3,509.6	33.8	6.2	11.6	2.1	(65.7)	2,641.5	26.9	6.5	8.8	2.1	(67.4)
GRA Total	61,103.4	183.0	1.9	149.8	1.4	(18.1)	50,428.1	141.4	1.8	108.5	1.4	(23.3)

Table H-1. Continued

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Crooked Wash/Deep Channel												
Wapiti Peak C340108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Citadel Plateau C240108	14,400.0	33.8	1.5	29.7	1.3	(12.3)	10,631.0	20.2	1.2	16.1	1.0	(20.2)
Smizer Gulch B340108	13,484.9	56.2	2.7	43.7	2.1	(22.2)	12,649.7	50.6	2.6	38.3	1.9	(24.5)
Indian Valley B240108	13,293.6	43.1	2.1	34.8	1.7	(19.2)	10,055.9	29.6	1.9	21.8	1.4	(26.4)
White Rock B140108	3,731.7	10.6	1.8	10.6	1.8	(0.0)	3,263.9	9.0	1.8	9.0	1.8	(0.0)
Buckskin Point A140108	16,338.9	56.8	2.2	55.7	2.2	(2.0)	6,550.4	11.9	1.2	10.8	1.1	(9.4)
GRA Total	76,334.5	248.6	2.1	218.5	1.8	(12.1)	53,871.5	148.4	1.8	118.3	1.4	(20.2)
Danforth/Jensen GRA												
Price Creek C140108	1,193.2	1.6	0.9	1.6	0.9	(0.0)	227.3	0.0	0.0	0.0	0.0	(0.0)
Devils Hole Gulch B840107	809.9	2.1	1.7	2.0	1.6	(5.7)	227.2	0.8	2.3	0.7	2.0	(14.5)
Nine Mile Gap B740107	13,247.1	45.7	2.2	44.9	2.2	(1.8)	3,057.9	5.4	1.1	4.6	1.0	(15.4)
Thornburgh B640107	7,398.9	36.1	3.1	35.7	3.1	(1.0)	328.8	1.9	3.6	1.5	2.9	(19.5)
Sleepy Cat Peak B540107	2,181.3	0.7	0.2	0.7	0.2	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Meeker A840107	10,490.8	43.1	2.6	43.1	2.6	(0.0)	3,461.0	9.9	1.8	9.9	1.8	(0.0)

Table H-1. Continued

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Rattlesnake Mesa A740107	8,825.8	52.4	3.8	52.4	3.8	(0.0)	737.9	4.0	3.5	4.0	3.5	(0.0)
Sawmill Mountain A640107	5,922.2	29.8	3.2	29.8	3.2	(0.0)	621.1	1.9	2.0	1.9	2.0	(0.0)
Fawn Creek A540107	2,248.8	4.8	1.4	4.8	1.4	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Lost Park A440107	4,428.0	6.9	1.0	6.9	1.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
LO 7 Hill H839107	4,070.4	29.1	4.6	28.3	4.4	(3.0)	658.3	4.2	4.0	3.3	3.2	(21.0)
Veach Gulch H739107	6,770.2	20.1	1.9	19.2	1.8	(4.3)	256.9	0.9	2.2	0.0	0.0	(100.0)
Big Beaver Res. H639107	9,755.9	29.2	1.9	27.1	1.8	(7.3)	1,145.5	2.1	1.2	0.0	0.0	(100.0)
Buford H539107	10,738.0	32.4	1.9	32.4	1.9	(0.0)	172.4	1.6	5.8	1.6	5.8	(0.0)
Thirteen Mile Creek G839107	9.2	0.1	4.2	0.1	4.2	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Red Elephant Point G739107	4,347.1	15.4	2.3	15.4	2.3	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Triangle Park G639107	1,721.8	2.3	0.8	2.3	0.8	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Meadow Creek Lake G539107	154.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Rio Blanco F839107	11,809.8	40.9	2.2	30.0	1.6	(26.6)	8,231.6	31.0	2.4	20.1	1.6	(35.1)
Horse Mountain F739107	166.8	1.6	6.0	1.6	6.0	(0.0)	67.0	0.5	4.3	0.5	4.3	(0.0)
GRA Total	55,751.6	235.0	2.7	229.8	2.6	(2.2)	10,648.8	33.0	2.0	27.8	1.7	(15.7)

Table H-1. Continued

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Piceance GRA												
Rough Gulch B440108	15,447.0	66.3	2.7	48.4	2.0	(26.9)	13,962.8	58.4	2.7	40.6	1.9	(30.5)
Gillam Draw A640108	3,426.7	17.8	3.3	11.6	2.2	(34.9)	3,391.7	17.7	3.4	11.5	2.2	(35.1)
Calamity Ridge A540108	9,266.5	33.4	2.3	26.0	1.8	(21.9)	8,383.3	28.6	2.2	21.2	1.6	(25.7)
Barcus Creek A440108	2,584.5	3.2	0.8	2.1	0.5	(34.3)	2,581.9	3.2	0.8	2.1	0.5	(34.6)
Barcus Creek SE A340108	25,257.1	78.1	2.0	64.1	1.6	(17.9)	20,950.5	55.6	1.7	42.0	1.3	(24.6)
White River City A240108	27,261.8	98.8	2.3	84.1	2.0	(14.9)	20,450.3	63.2	2.0	48.5	1.5	(23.3)
Sagebrush Hill H539108	17,817.3	47.3	1.7	43.9	1.6	(7.1)	6,979.7	21.5	2.0	18.0	1.7	(16.1)
Wolf Ridge H439108	6,368.2	16.3	1.6	15.9	1.6	(2.2)	5,339.0	9.4	1.1	9.1	1.1	(3.6)
Square S Ranch H339108	33,890.6	126.8	2.4	101.6	1.9	(19.9)	30,558.6	102.6	2.2	77.2	1.6	(24.8)
Greasewood Gulch H239108	13,202.1	66.2	3.2	49.6	2.4	(25.0)	12,197.5	61.8	3.2	45.2	2.4	(26.8)
Segar Mountain H139108	883.9	7.0	5.1	6.7	4.9	(4.7)	308.9	3.6	7.5	3.3	6.8	(9.4)
Black Cabin Gulch G539108	24,091.1	81.8	2.2	79.1	2.1	(3.3)	10,751.3	35.7	2.1	32.9	2.0	(7.6)
Yankee Gulch G439108	10.7	0.2	14.4	0.2	14.4	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Rock School G339108	6,488.3	30.2	3.0	24.3	2.4	(19.5)	5,067.3	22.4	2.8	16.4	2.1	(26.8)

Table H-1. Continued

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Jessup Gulch G239108	12,791.3	51.5	2.6	46.7	2.3	(9.4)	11,546.4	41.6	2.3	36.8	2.0	(11.6)
No Name Ridge G139108	1,763.5	8.2	3.0	7.1	2.6	(13.0)	1,333.5	3.5	1.7	2.4	1.2	(30.0)
Razorback Ridge F539108	31,548.6	106.2	2.2	103.4	2.1	(2.7)	13,550.7	40.9	1.9	38.1	1.8	(6.9)
Figure 4 Spring F439108	25,860.4	121.3	3.0	121.3	3.0	(0.0)	1,179.4	4.2	2.3	4.2	2.3	(0.0)
Bull Fork F339108	15,567.9	80.7	3.3	72.8	3.0	(9.8)	6,040.5	32.5	3.5	25.7	2.7	(21.1)
Cut-Off Gulch F239108	13,075.1	76.5	3.7	75.1	3.7	(1.9)	1,763.1	10.8	3.9	9.4	3.4	(13.1)
McCarthy Gulch F139108	20,207.5	103.3	3.3	101.2	3.2	(2.1)	4,073.8	18.5	2.9	16.3	2.6	(11.6)
Rio Blanco F839107	11,809.8	40.9	2.2	30.0	1.6	(26.6)	8,231.6	31.0	2.4	20.1	1.6	(35.1)
Henderson Ridge E539108	196.7	0.2	0.5	0.2	0.5	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Desert Gulch E439108	1,004.3	3.4	2.1	3.4	2.1	(0.0)	95.1	0.9	5.9	0.9	5.9	(0.0)
Mount Blaine E339108	13,948.0	71.3	3.3	68.8	3.2	(3.6)	2,512.5	12.0	3.1	9.5	2.4	(21.0)
Circle Dot Gulch E239108	7,298.8	26.4	2.3	26.0	2.3	(1.4)	425.9	2.3	3.4	1.9	2.9	(16.7)
Forked Gulch E139108	513.5	1.4	1.7	1.4	1.7	(0.0)	257.8	0.5	1.3	0.5	1.3	(0.0)
GRA Total	306,212.5	1,263.2	2.6	1,122.3	2.4	(11.2)	160,467.9	594.1	2.4	453.1	1.8	(23.7)

Table H-1. Continued

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Douglas/Cathedral GRA												
Banty Point A840108	1,066.9	5.0	3.0	2.2	1.3	(56.2)	1,062.1	5.0	3.0	2.2	1.3	(56.4)
Rangely A740108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Weaver Ridge H139109	2,171.0	12.3	3.6	9.5	2.8	(23.1)	2,168.6	12.3	3.6	9.5	2.8	(23.1)
Banta Ridge H839108	2,259.0	13.1	3.7	6.8	1.9	(47.9)	2,156.4	12.3	3.6	6.0	1.8	(51.0)
Water Canyon H739108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Philadelphia Creek H639108	3,622.6	6.2	1.1	5.6	1.0	(9.0)	2,361.9	4.4	1.2	3.8	1.0	(13.3)
Dragon Trail G139109	5,577.1	9.7	1.1	6.2	0.7	(35.3)	5,347.5	9.4	1.1	5.9	0.7	(36.5)
Texas Creek G839108	2,969.8	3.8	0.8	2.1	0.4	(45.7)	1,961.9	0.4	0.1	0.0	0.0	(100.0)
Texas Mountain G739108	2,922.8	15.8	3.5	7.9	1.8	(49.8)	2,919.8	15.8	3.5	7.9	1.7	(49.8)
White Coyote Draw G639108	6,564.3	28.5	2.8	23.9	2.3	(16.1)	6,118.8	25.5	2.7	20.9	2.2	(18.1)
Davis Canyon F139109	7,045.0	8.2	0.7	8.2	0.7	(0.0)	6,493.0	5.8	0.6	5.8	0.6	(0.0)
E. Evacuation Creek F839108	25,634.1	85.3	2.1	63.4	1.6	(25.7)	21,737.4	69.1	2.0	47.2	1.4	(31.7)
Big Foundation Creek F739108	20,088.7	83.0	2.6	72.0	2.3	(13.3)	14,178.8	63.4	2.7	52.4	2.4	(17.3)

Table H-1. Continued

Quad Name	Critical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Brushy Point F639108	34,438.4	108.5	2.0	96.6	1.8	(11.0)	26,223.8	74.3	1.8	62.4	1.5	(16.0)
Rat Hole Ridge E139109	12,495.3	49.1	2.5	46.4	2.4	(5.5)	9,767.7	36.5	2.4	33.7	2.2	(7.7)
Baxter Pass E839108	9,359.4	34.1	2.3	28.8	2.0	(15.4)	6,294.7	20.9	2.1	15.6	1.6	(25.1)
Douglas Pass E739108	5,556.3	21.6	2.5	21.1	2.4	(2.4)	2,044.2	4.4	1.4	3.9	1.2	(11.7)
Calf Canyon E639108	4,518.1	6.1	0.9	5.6	0.8	(9.4)	4,214.3	5.1	0.8	4.6	0.7	(11.1)
GRA Total	159,811.1	525.4	2.1	453.4	1.8	(13.7)	125,005.1	388.7	2.0	316.9	1.6	(18.5)
White River												
GRA Total	9,407.0	56.8	3.9	54.0	3.7		2,380.9	11.8	3.2	9.1	2.4	
RESOURCE AREA TOTAL												

Table H-2. Road Density in Noncritical Wildlife Habitat

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Blue Mountain												
Hells Canyon D840108	24,585.5	68.2	1.8	63.2	1.6	(7.3)	6,080.9	21.1	2.2	16.1	1.7	(23.6)
Tanks Peak D740108	26,827.2	61.3	1.5	55.6	1.3	(9.3)	10,104.1	30.2	1.9	24.6	1.6	(18.8)
Haystack Rock D640108	11,413.3	13.5	0.8	13.5	0.8	(0.0)	684.0	0.3	0.3	0.3	0.3	
Snake John Reef C140109	14,705.7	45.3	2.0	35.6	1.6	(21.5)	10,033.8	24.4	1.6	14.7	0.9	(39.9)
Plug Hat Rock C840108	23,588.7	71.2	1.9	62.5	1.7	(12.2)	16,440.5	34.5	1.3	26.0	1.0	(24.7)
Lazy Y Point C740108	21,425.4	50.8	1.5	44.3	1.3	(12.8)	12,813.6	19.0	1.0	12.5	0.6	(34.2)
Skull Creek C640108	32,385.8	108.7	2.2	94.8	1.9	(12.7)	20,887.0	46.5	1.4	32.7	1.0	(29.7)
Dinosaur B140109	12,585.4	85.8	4.4	66.1	3.4	(26.5)	11,037.3	66.9	3.9	47.2	2.7	(33.5)
GRA Total	133,629.9	443.7	2.1	380.3	1.8	(14.3)	87,431.1	213.8	1.6	150.8	1.1	(29.5)
Wolf Ridge/Red Wash												
Indian Water Canyon D540108	13,613.3	23.2	1.1	19.6	0.9	(15.4)	5,757.9	11.6	1.3	8.1	0.9	(30.6)
Cross Mtn. Canyon D340108	236.3	1.8	4.8	1.8	4.8	(0.0)	36.1	0.3	4.8	0.3	4.8	(0.0)
MF Mountain C540108	18,508.8	52.7	1.8	44.4	1.5	(15.8)	14,662.2	33.8	1.5	25.8	1.1	(23.5)

Table H-2. Continued

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Elk Springs C440108	13,050.6	66.2	3.3	61.4	3.0	(7.3)	8,465.6	32.9	2.5	28.2	2.1	(14.4)
Dinosaur B140109	12,585.4	85.8	4.4	66.1	3.4	(23.0)	11,037.3	66.9	3.9	47.2	2.7	(29.5)
Mellen Hill B840108	36,582.0	134.5	2.4	128.0	2.2	(4.9)	29,941.4	102.2	2.2	95.9	2.1	(6.2)
Rangely NE B740108	36,571.2	141.7	2.5	121.3	2.1	(14.4)	31,143.5	105.4	2.2	85.0	1.8	(19.3)
Cactus Reservoir B640108	36,569.9	152.0	2.7	121.1	2.1	(20.4)	32,267.5	127.5	2.5	96.5	1.9	(24.3)
Divide Creek B540108	25,446.7	105.6	2.7	88.9	2.2	(15.8)	22,898.2	83.6	2.3	66.9	1.9	(20.0)
Walsh Knolls A140109	11,256.4	77.1	4.4	40.6	2.3	(47.4)	3,483.9	36.6	6.7	15.4	2.8	(58.0)
GRA Total	183,103.3	821.7	2.9	707.9	2.5	(13.9)	144,705.9	555.2	2.5	441.6	2.0	(20.5)
Crooked Wash/Deep Channel												
Wapiti Peak C340108	4,886.4	16.9	2.2	16.1	2.1	(4.3)	3,020.5	10.0	2.1	8.8	1.9	(12.1)
Citadel Plateau C240108	778.6	3.2	2.6	1.9	1.6	(40.8)	519.7	2.5	3.0	1.1	1.4	(53.5)
Smizer Gulch B340108	22,829.6	80.1	2.3	63.7	1.8	(20.5)	17,219.7	57.6	2.1	41.2	1.5	(28.5)
Indian Valley B240108	23,253.5	73.0	2.0	62.1	1.7	(14.9)	16,736.9	44.8	1.7	34.0	1.3	(24.1)
White Rock B140108	32,492.6	114.3	2.3	111.1	2.2	(2.8)	18,240.7	36.7	1.3	33.5	1.2	(8.6)

Table H-2. Continued

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Buckskin Point A140108	20,267.1	68.6	2.2	61.3	1.9	(10.6)	12,440.9	21.3	1.1	14.0	0.7	(34.0)
GRA Total	100,633.0	329.2	2.1	272.7	1.7	(17.2)	69,658.6	172.1	1.6	115.7	1.1	(32.8)
Danforth/Jensen GRA												
Price Creek C140108	8,785.2	43.7	3.2	43.7	3.2	(0.0)	2,656.1	11.4	2.7	11.4	2.7	(0.0)
Devils Hole Gulch B840107	22,375.0	84.1	2.4	81.5	2.3	(3.1)	9,660.1	35.9	2.4	33.3	2.2	(7.2)
Nine Mile Gap B740107	12,856.4	89.6	3.0	58.7	2.9	(1.5)	789.4	3.8	3.0	2.8	2.3	(24.5)
Thornburgh B640107	21,432.5	84.8	2.5	84.4	2.5	(0.5)	3,232.9	7.8	1.6	7.4	1.5	(5.0)
Sleepy Cat Pk. B540107	22,174.7	41.5	1.2	42.9	1.2	(0.0)	39.8	0.0	0.0	0.0	0.0	(0.0)
Meeker A840107	26,111.3	161.7	4.0	161.7	4.0	(0.0)	5,767.1	18.8	2.1	18.8	2.1	(0.0)
Rattlesnake Mesa A740107	27,771.0	125.5	2.9	125.5	2.9	(0.0)	3,782.2	5.1	0.9	5.1	0.9	(0.0)
Sawmill Mountain A640107	30,671.2	133.9	2.8	133.2	2.8	(0.5)	2,274.1	4.4	1.2	3.8	1.1	(14.5)
Fawn Creek A540107	34,341.0	83.5	1.6	83.5	1.6	(0.0)	693.3	2.8	2.6	2.8	2.6	(0.0)
Lost Park A440107	29,116.4	55.0	1.2	55.0	1.2	(0.0)	181.3	0.5	1.8	0.5	1.8	(0.0)
LO 7 Hill H839107	32,598.2	269.0	5.3	263.2	5.2	(2.1)	6,412.6	29.9	3.0	24.1	2.4	(19.2)

Table H-2. Continued

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Veach Gulch H739107	29,894.9	123.7	2.7	123.2	2.6	(0.5)	1,506.1	2.1	0.9	1.6	0.7	(27.1)
Big Beaver Res. H639107	26,904.4	93.0	2.2	92.4	2.2	(0.7)	985.3	0.6	0.4	0.0	0.0	(100.0)
Buford H539107	25,917.4	53.3	1.3	53.3	1.3	(0.0)	1,623.7	1.9	0.8	1.9	0.8	(0.0)
Thirteen Mile Creek G839107	36,720.1	171.2	3.0	167.6	2.9	(2.1)	8,578.6	35.2	2.6	31.7	2.4	(10.0)
Red Elephant Point G739107	24,168.3	55.3	1.5	55.3	1.5	(0.0)	488.1	0.9	1.2	0.9	1.2	(0.0)
Triangle Park G639107	16,753.4	24.8	1.0	24.8	1.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Meadow Creek Lake G539107	15,882.9	23.7	1.0	23.7	1.0	(0.0)	6.2	0.0	0.0	0.0	0.0	(0.0)
Rio Blanco F839107	4,827.1	19.1	2.5	16.5	2.2	(13.3)	2,638.6	8.9	2.2	6.4	1.6	(28.3)
Horse Mountain F739107	766.4	1.1	0.9	1.1	0.9	(0.0)	527.6	1.0	1.2	1.0	1.2	(0.0)
GRA Total	235,456.4	1,033.2	2.8	1,023.7	2.8	(0.9)	44,686.3	131.9	1.9	122.5	1.8	(7.2)
Piceance GRA												
Rough Gulch B440108	21,102.1	76.1	2.3	54.4	1.7	(16.3)	17,782.5	58.3	2.1	36.6	1.3	(37.2)
Gillam Draw A640108	33,208.6	104.6	2.0	97.4	1.9	(28.5)	31,123.7	91.7	1.9	80.8	1.7	(11.9)
Calamity Ridge A540108	27,357.7	88.2	2.1	80.1	1.9	(7.0)	23,529.0	71.5	1.9	63.4	1.7	(11.3)

Table H-2. Continued

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Barcus Creek A440108	34,037.2	96.2	1.8	74.5	1.4	(9.2)	33,224.6	91.6	1.8	70.0	1.4	(23.7)
Barcus Creek SE A340108	11,360.8	35.0	2.0	24.7	1.4	(22.6)	8,630.1	25.8	1.9	15.4	1.2	(40.1)
White River City A240108	9,343.3	44.1	3.0	43.5	3.0	(29.3)	2,832.4	9.5	2.2	9.0	2.0	(6.0)
Sagebrush Hill H539108	18,877.8	61.7	2.1	57.9	2.0	(1.4)	13,298.5	41.2	2.0	37.1	1.8	(10.0)
Wolf Ridge H439108	30,322.6	106.5	2.3	83.3	1.8	(6.1)	25,701.4	81.1	2.0	57.9	1.4	(28.6)
Square S Ranch H339108	2,789.9	9.5	2.2	9.2	2.1	(21.8)	2,599.6	8.6	2.1	8.2	2.0	(3.9)
Greasewood Gulch H239108	23,476.6	114.1	3.1	76.5	2.1	(3.3)	22,848.7	109.7	3.1	72.1	2.0	(34.3)
Segar Mountain H139108	35,782.3	110.8	2.0	95.9	1.7	(33.0)	30,441.6	86.6	1.8	71.8	1.5	(17.2)
Black Cabin Gulch G539108	12,660.7	34.9	1.8	30.9	1.6	(13.4)	8,757.5	23.1	1.7	19.1	1.4	(17.2)
Yankee Gulch G439108	36,742.2	150.0	2.6	117.9	2.1	(11.5)	28,760.7	113.6	2.5	81.5	1.8	(28.2)
Rock School G339108	30,256.0	121.5	2.6	104.7	2.2	(21.4)	25,623.5	98.0	2.5	81.1	2.0	(17.2)
Jessup Gulch G239108	23,953.3	96.6	2.6	81.0	2.2	(13.9)	20,110.3	76.9	2.5	61.3	2.0	(20.2)
No Name Ridge G139108	34,968.4	159.7	2.9	116.8	2.1	(16.1)	30,575.0	133.8	2.8	91.0	1.9	(32.0)

Table H-2. Continued

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Razorback Ridge F539108	196.9	0.2	0.5	0.1	0.5	(26.8)	21.3	0.0	0.0	0.0	0.0	(0.0)
Figure 4 Spring F439108	10,409.8	38.1	2.3	34.6	2.1	(6.7)	4,398.0	16.8	2.5	13.4	1.9	(20.6)
Bull Fork F339108	21,243.4	80.6	2.4	67.7	2.0	(9.1)	18,925.7	68.2	2.3	55.3	1.9	(18.9)
Cut-Off Gulch F239108	23,493.9	100.9	2.8	98.6	2.7	(16.0)	10,863.9	42.2	2.5	39.9	2.4	(5.5)
McCarthy Gulch F139108	16,491.6	84.2	3.3	81.8	3.2	(2.3)	3,560.5	14.8	2.7	12.5	2.3	(15.7)
Rio Blanco F839107	4,827.1	19.1	2.5	16.5	2.2	(2.8)	2,638.6	8.9	2.2	6.4	1.6	(28.3)
Henderson Ridge E539108	134.6	0.0	0.0	0.0	0.0	(13.3)	0.0	0.0	0.0	0.0	0.0	(0.0)
Desert Gulch E439108	422.7	1.1	1.7	1.1	1.7	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Mount Blaine E339108	1,690.4	2.7	1.0	2.7	1.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Circle Dot Gulch E239108	612.0	4.7	4.9	4.7	4.9	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Forked Gulch E139108	2,332.3	8.3	2.3	8.3	2.3	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
GRA Total	488,746.3	1,920.1	2.5	1,606.5	2.1	(16.3)	377,708.4	1,357.6	2.3	1,044.4	1.8	(23.1)
Douglas/Cathedral GRA												
Banty Point A840108	35,581.7	156.1	2.8	126.8	2.3	(18.8)	27,985.4	101.8	2.3	66.3	1.5	(34.8)

Table H-2. Continued

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Rangely A740108	36,642.3	423.3	7.4	221.1	3.9	(47.8)	27,116.9	228.6	5.4	112.0	2.6	(51.0)
Weaver Ridge H139109	12,521.6	37.4	1.9	31.8	1.6	(15.0)	9,227.9	28.3	2.0	22.7	1.6	(19.8)
Banta Ridge H839108	34,452.0	135.2	2.5	108.9	2.0	(19.5)	33,057.9	126.9	2.5	100.5	2.0	(20.8)
Water Canyon H739108	36,702.8	192.0	3.4	110.6	1.9	(42.4)	36,702.8	192.0	3.4	110.6	1.9	(42.4)
Philadelphia Creek H639108	33,074.6	87.5	1.7	74.9	1.5	(14.3)	31,992.7	81.7	1.6	69.1	1.4	(15.3)
Dragon Trail G139109	9,185.6	25.3	1.8	22.3	1.6	(11.9)	7,668.7	20.3	1.7	18.4	1.5	(9.1)
Texas Creek G839108	33,811.2	121.7	2.3	89.9	1.7	(26.1)	28,470.3	92.3	2.1	62.2	1.4	(32.6)
Texas Mountain G739108	33,849.2	208.6	3.9	162.1	3.1	(22.3)	33,452.6	204.9	3.9	158.3	3.0	(22.7
White Coyote Draw G639108	30,194.7	104.5	2.2	97.0	2.1	(7.2)	29,493.6	96.9	2.1	89.4	1.9	(7.8)
Davis Canyon F139109	7,852.2	28.8	2.4	19.7	1.6	(31.5)	7,528.6	26.0	2.2	16.9	1.4	(35.0)
E. Evacuation Creek F839108	11,212.2	22.7	1.3	9.0	0.5	(60.4)	10,985.1	21.2	1.2	7.5	0.4	(64.6)
Big Foundation Creek F739108	16,746.9	65.5	2.5	62.9	2.4	(3.9)	14,789.6	39.8	1.7	37.2	1.6	(6.5)
Brushy Point F639108	261.9	1.0	2.5	0.6	1.4	(44.2)	274.2	1.2	2.8	0.7	1.7	(40.8)

Table H-2. Continued

Quad Name	Noncritical Habitat											
	Overall Road Density						Road Density on BLM Land					
	Current Density			Proposed Density (Alts C and D)			Current Density			Proposed Density (Alts C and D)		
	Acres	Miles	Density	Miles	Density	% Change	Acres	Miles	Density	Miles	Density	% Change
Rat Hole Ridge E139109	21.3	0.2	4.5	0.0	1.2		23.7	0.1	1.9	0.1	1.6	(14.3)
Baxter Pass E839108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Douglas Pass E739108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
Calf Canyon E639108	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)
GRA Total	308,134.5	1,207.9	2.5	930.6	1.9	(23.0)	285,679.9	1,078.8	2.4	801.4	1.8	(25.7)
White River												
GRA Total	46,382.8	328.8	4.5	320.0	4.4		10,044.1	76.3	4.9	67.4	4.3	
RESOURCE AREA TOTAL												

APPENDIX I
LAND OWNERSHIP ADJUSTMENTS AND WITHDRAWALS

This appendix consists of two major sections: (1) Land Ownership Adjustments and (2) Land Withdrawals. Please see also the Land Ownership Adjustments and Lands Withdrawals Sections in Chapter 2.

LAND OWNERSHIP ADJUSTMENTS

CATEGORY 1 LANDS

Tables I-1 through I-4 list, by alternative, public lands that have been identified as suitable for all forms of disposal, including sale under section 203 of the Federal Land Policy and Management Act of 1976, but excluding agricultural entries and general allotments. These tracts are difficult or uneconomical to manage for various reasons. They are not known to have significant resource values.

Table I-1 lists small, isolated tracts (totaling 19,195.03 acres under Alternative A and 7491.68 acres in all other alternatives) that are disconnected from other more manageable blocks of public land. These parcels are less than 640 acres and either do not have public access, or it is severely restricted.

Table I-2 lists small, isolated tracts (totaling approximately 638 acres) that have effectively been severed from other public lands by major roads and right-of-way fences and may be more appropriately/effectively managed by adjacent land owners. Only the smallest parcel effectively severed by the road would be considered for disposal, and formal surveys would be required to re-lot these parcels. Purchasers would generally be required to reimburse the United States for such surveys. Because of their small size, these parcels are not displayed on the ownership adjustment map in Chapter 2.

Table I-3 lists public land parcels (totaling 11.85 acres) upon which permanent or semi-permanent structures have been constructed in trespass, and are now authorized under applicable permits. These structures are needed for the residential use of adjacent property. Only the smallest legal subdivision supporting the authorized use would be considered as suitable for disposal under section 203. Surveys would be required to re-lot the parcels where necessary to minimize their size. Purchasers may be required to reimburse the United States for the cost ofsurveys. Because of their small size, these parcels are not displayed on the ownership adjustment map.

Table I-4 lists public lands (totaling 602.84 acres in Alternative A, and 787.05 acres in all others) that would serve the important public service of community expansion for the Town of Rangely.

Appendix I

Table I-1. Category I Disposal Lands--Small, Isolated Tracts

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
1 N.	90 W.	19	Lots 7, 12	55.18	A
		20	Lots 1-6, NWNE, NENW, W½NW	289.71	A
		21	Lots 1-4	80.45	A
		22	Lots 3-5, 11-13, 15-18	94.65	A
		30	Lots 6, 7, 9, 10 E½SW, NWSE	200.52	A
1 N.	91 W.	25	Lots 5, 8-10	61.30	A
		25	Lot 15	4.24	B, C, D
		30	Lots 5, 9, 10	69.30	B, C, D
		36	Lots 27, 52	9.75	B, C, D
		36	Lots 11, 12, 19, 31-36, 38, 39,59,60	39.56	A, B, C, D
		36	NENE	40	A
1 N.	92 W.	4	Lot 12	1.18	A, B, C, D
		9	Lots 2, 3	19.31	A, B, C, D
		10	NENE	40	A
		11	SE, S½NE, NWNE, N½NW, SENW, NESW	440	A
		14	N½SW	80	A, B, C, D
		15	NESE	40	A, B, C, D
		16	N½SE	80	A, B, C, D
		17	Lots 2, 4, NWSW	46.54	A, B, C, D
		18	SESW	40	A, B, C, D
		19	Lot 6	5.18	A, B, C, D
		20	Lot 6	6.54	A, B, C, D
		21	Lot 18	5.69	A, B, C, D
		27	Lots 3, 4	8.55	A, B, C, D
		28	Lots 2, 4	7.53	A, B, C, D
		35	SWNE, SWNW, NESE	120	A
		36	NWNW	40	A
1 N.	93 W.	4	Lot 1, SENE, NESE	120	A, B, C, D
		9	Lots 1, 8	12.03	B, C, D

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
		34	Lots 29, 31	6.97	A, B, C, D
1 N.	94 W.	5	Lot 4	1.42	B, C, D
		6	Lots 10-13	65.02	A, B, C, D
		7	Lot 22	6.09	A, B, C, D
		11	NWNE	40	A, B, C, D
		11	Lots 19, 27, 29	3.50	B, C, D
		12	Lots 4, 9	0.91	B, C, D
		14	Lots 12, 13	0.55	B, C, D
		14	Lots 15, 23,28, 29	0.30	A, B, C, D
		18	Lot 1	19.34	A, B, C, D
		23	Lot 12	0.57	A, B, C, D
1 N.	95 W.	1	S½SW, SWSE	120	A, B, C, D
		2	SESE	40	A, B, C, D
		2	Lot 4, SWNW, NWSW	120	A, B, C, D
		10	NWNW	40	A, B, C, D
		11	N½NE, SENE	120	A, B, C, D
		12	W½NW, NWSW	120	A, B, C, D
		13	Lot 4	0.77	B, C, D
		14	Lots 4, 5	25.08	A, B, C, D
		23	Lot 8	23.46	A, B, C, D
		26	Lot 25	0.00+	B, C, D
		27	Lot 40	9.72	B, C, D
		34	Lot 6	39.62	A, B, C, D
1 N.	103 W.	18	Lots 1-4, 9	169.31	A
1 N.	104 W.	23	N½NWSE	20	A, B, C, D
		24	Lots 2, 3, 5, 9, 10, W½NE, NWSE	187.23	A

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
2 N.	92 W.	4	Lots 3, 9, NWSE	126.54	A, B, C, D
		5	Lots 1, 8	5.26	B, C, D
		8	NWSW	40	A, B, C, D
		18	Lots 8, 9, W½SE	120.04	A
		19	Lots 6, 7, W½E½	199.76	A
		28	Lots 13, 15, 17, 20	45.95	A
		29	Lots 5, 6, 9, 18, NWSW	95.12	A, B, C, D
		30	Lots 2, 3, 5	102.08	A
		31	E½SE	80	A, B, C, D
		32	Lot 6	14.39	A, B, C, D
		33	Lots 2, 3, NWNE, S½NE, E½NW, NESW, N½SE	375.58	A
2 N.	93 W.	4	Lots 1, 22, 23	77.86	A
		4	SWSW	40	A, B, C, D
		5	Lots 1, 10	21.89	A, B, C, D
		9	Lot 1	12.92	B, C, D
		9	Lot 8	0.34	B, C, D
		10	Lot 30	14.01	A
		11	Lot 11	10.23	A
		35	SWNE	40	B, C, D
2 N.	94 W.	4	W½SW, S½SE	160	A
		5	SE, E½SW, NWSW	280	A
		7	Lots 8, 18, 19	35.32	A, B, C, D
		8	Lot 3, 7, 9, NWSW	123.16	A, B, C, D
		8	Lot 6	1.37	B, C, D
		8	NENE, NENW	80	A
		9	NWSW	40	A, B, C, D
		9	NE, SENW, N½SE, SESE	320	A
		10	SESW, W½SE	120	A, B, C, D
		10	W½NW	80	A, B, C, D

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
		11	SWSW	40	A, B, C, D
		12	E½SW	80	A, B, C, D
		13	Lot 7	0.26	B, C, D
		13	E½NW	80	A, B, C, D
		14	W½NW	80	A, B, C, D
		15	NWNE, NENW, NESW	120	A, B, C, D
		16	SWSE	40	A, B, C, D
		17	SWNE, SENW, NWSE	120	A, B, C, D
		20	NWNE, NENW	80	A, B, C, D
		29	NENE	40	A, B, C, D
2 N.	95 W.	1	NESW	40	A, B, C, D
		12	N½NW	80	A, B, C, D
		35	SWSW	40	A, B, C, D
		36	SESW	40	A, B, C, D
2 N.	96 W.	17	NESW	40	A
2 N.	102 W.	30	W½NE, W½SE	160	A
		31	W½NE	80	A
3 N.	91 W.	22	NESW	40	B, C, D
		29	Lots 2, 7-10	215.95	A
		30	Lot 5	42.69	A
		31	Lot 2, SENE, E½SE	163.25	A
		32	Lots 1-8	328.17	A
3 N.	92 W.	23	Lots 10, 16, 21, 24	3.80	B, C, D
		24	Lots 7, 8	3.47	B, C, D
		26	Lot 4	0.10	B, C, D
		28	Lot 35	0.75	B, C, D

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
		29	SWSE	40	A
		31	NESE	40	A, B, C, D
		32	S½NE, NWNE, SENW, E½SW, SE	400	A
		34	Lots 7, 9	17.17	B, C, D
		35	Lots 18, 19, 22, 30	12.32	A, B, C, D
		36	Lots 5, 7	3.50	A, B, C, D
3 N.	93 W.	33	Lots 5, 19, 28-31, NWSW	86.71	B, C, D
3 N.	95 W.	3	SESW	40	A, B, C, D
		9	SWNW	40	A, B, C, D
		10	NW	160	A, B, C, D
		17	Lot 6	20.17	A, B, C, D
		22	NWSE	40	A, B, C, D
		26	Lots 7, 8	40.01	A, B, C, D
		35	SWSE	40	A, B, C, D
		36	SWNE, SENW, S½SE	160	A, B, C, D
3 N.	96 W.	2	Lot 7	39.62	A, B, C, D
3 N.	97 W.	25	SWSE	40	A
3 N.	101 W.	1	Lots 9, 12	78.47	A
		12	NWNE	40	A
3 N.	102 W.	1	Lot 3, SWSE	80.06	A
		2	S½NE, N½SE	160	A
3 N.	103 W.	8	Lots 1-17, SESW	79.72	A
4 N.	95 W.	30	Lot 6, NWNE, SENW	117.17	A, B, C, D

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
4 N.	96 W.	24	W½SE	80	A, B, C, D
		26	Lots 5, 6	1.39	B, C, D
4 N.	101 W.	25	S½SW	80	A
		26	S½S½	160	A
		27	S½SE, SESW	120	A
		35	N½N½	160	A
5 N.	99 W.	25	NWSW	40	A
		25	S½SE, SESW	120	A
5 N.	100 W.	6	SWSW	40	B, C, D
		7	NWNE, NESE	80	B, C, D
		9	NWSW	40	B, C, D
5 N.	101 W.	1	Lot 5, SESE	80.02	A, B, C, D
		17	E½SE, NWSW	120	A, B, C, D
		18	S½NE, N½SE	160	A, B, C, D
		19	Lot 8	39.80	A, B, C, D
		20	E½SE	80	A
		21	NENW	40	A, B, C, D
		29	NE, N½SE	240	A
		31	NENW, SESW, SESE	120	A, B, C, D
		32	SWNE, SENW, NWSE, NESW	160	A
		32	SWSW	40	A, B, C, D
		33	S½NW	80	A, B, C, D
5 N.	102 W.	18	NENE	40	A, B, C, D
		20	SWSW	40	A, B, C, D
		28	SW	160	A

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
		29	E½SE	80	A
5 N.	103 W.	5	Lots 6-8, SWNW, SESW	199.32	A
		6	Lot 8, SENE	79.57	A
		14	NWSW	40	A, B, C, D
6 N.	100 W.	31	Lots 7, 8, E½SW	149.95	A
6 N.	101 W.	34	NESE	40	A
		35	N½S½	160	A
		36	Lot 10, N½SW, NWSE	160.02	A
6 N.	103 W.	27	SWSE, S½SW	120	A
		28	SESE, NESW, SENW	120	A
		29	S½NE, SWSW, SENW	160	A
		31	NWNE, NENW	80	A
		32	NWSW	40	A
		34	NWNE, NENW	80	A
		36	W½SE, NESW	120	A
1 S.	91 W.	3	SWSW	40	A, B, C, D
		4	SESW	40	A
		24	E½E½	160	A
		35	W½NE, SE	320	A
1 S.	92 W.	4	Lots 1, 4	151.12	A
		30	SESW, SWSE	80	A,B,C,D
		31	SWNE, E½W½, NWSE	320	A,B,C,D
1 S.	93 W.	17	SESW	40	A, B, C, D
		20	SWSE	40	A, B, C, D

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
		30	Lot 2, S½NE, SENW	158.47	A, B, C, D
		33	SWNE	40	A, B, C, D
1 S.	94 W.	4	E½E½	160	A
		9	E½E½	160	A
		16	E½E½	160	A
		21	NENE	40	A
		22	NWNW	40	A
		31	Lots 3, 4	73.68	A, B, C, D
		35	SESE	40	A
		36	NESW, SWSW	80	A
2 S.	90 W.	6	Lot 4	38.60	A
2 S.	91 W.	1	Lot 1, SWNW, SW	240.03	A
		12	W½SE	80	A
		13	W½E½	160	A
2 S.	93 W.	1	Lots 1, 2, 4	64.21	A, B, C, D
		2	Lot 1	15.88	A, B, C, D
		4	Lot 4	16.55	A, B, C, D
		5	Lots 2, 4	32.63	A, B, C, D
		11	E½NE, NESE	120	A, B, C, D
		11	SWSE	40	A, B, C, D
		12	W½NW	80	A, B, C, D
		12	SESW, W½SE	120	A
		14	NWNE, N½NW, SESW, S½SE	240	A
2 S.	94 W.	1	Lot 1	49.08	A, B, C, D
		1	Lots 3, 4, 5	178.33	A
		2	Lot 1, NENE	89.18	A

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
		6	Lot 4	46.47	A, B, C, D
		28	SENE, NESE	80	A, B, C, D
2 S.	103 W.	3	SESW	40	A
		21	W½NE	80	A
3 S.	93 W.	19	NESE	40	A
		20	N½SW	80	A
		29	NWNW	40	A, B, C, D
3 S.	94 W.	8	SWNW	40	A, B, C, D
		14	NESE	40	A, B, C, D
		15	SWSE	40	A, B, C, D
		20	SWNE	40	A, B, C, D
		22	SENE, NESE	80	A, B, C, D
		23	S½NW, NESW	120	A, B, C, D
3 S.	100 W.	25	NESW	40	A
4 S.	97 W.	31	NWNW	40	B, C, D
4 S.	98 W.	22	S½NW	80	B, C, D
		30	E½E½E½	80	B, C, D
4 S.	100 W.	4	W½SE, SESW	120	A
		8	SWNE, NWSE, SENW, N½SW, SESW	240	A
		9	E½NW	80	A
		17	S½NW, NWSW	120	A
		29	SWNE	40	A
5 S.	96 W.	7	NWSE, S½SE	120	A

Table I-1 continued

Township	Range	Section	Subdivision	Acreage	Applicable Alternative
		17	SW	160	A
		18	Lot 4, SE	211.46	A
5 S.	98 W.	6	Lot 18	26.13	A, B, C, D
		13	Lots 3, 4	41.01	A
		8	S½SE	80	A, B, C, D
		9	SWSW	40	A, B, C, D
		10	W½NW, NWSW	120	A, B, C, D
		13	NENE	40	A, B, C, D
		16	S½NW	80	A
		23	SENW	40	A, B, C, D
5 S.	103 W.	21	SESW	40	A, B, C, D
		28	W½NE	80	B, C, D
5 S.	104 W.	26	SWNW	40	A
		27	SENE	40	A

Table I-2. Category I Disposal Lands - Tracts Severed by Major Roads and Rights-of Way
(Applicable Only Under Alternatives B and D)

Township	Range	Section	Subdivision	Approximate Acreage
1 N.	94 W.	3	Lots 20, 23, 28	5
1 N.	95 W.	28	Lot 29	1
		29	Lots 8, 11	7
		31	Lot 1	15
		32	Lot 14	3
1 N.	96 W.	5	Lots 16, 18	2

Table I-2 continued

Township	Range	Section	Subdivision	Approximate Acreage
		9	Lots 12, 17	5
		15	SWNENW, SWSWNE	5
		25	Lots 10, 12, 26	15
1 N.	97 W.	1	Lot 22	1
		26	Lot 11	5
		27	Lot 8	1
		35	Lot 23	10
2 N.	94 W.	27	SESW	5
		34	Lot 1	5
2 N.	97 W.	18	Lots 20, 28, 29, 31	5
		19	Lot 10	5
		20	Lots 8, 9, 21, 23	10
		28	Lots 9, 20	20
		29	Lot 3	5
		34	Lots 21, 24	10
2 N.	98 W.	3	Lots 7, 8, 15, SWNW	45
		4	Lots 5, 6, 23, 30	35
		5	Lots 16, 25, 27, 29, 31	25
		6	Lots 8, 9, 16	25
		11	Lots 13, 14	10
		12	Lots 9, 10, 11, 27	15
2 N.	100 W.	2	Lots 6, 21	5
		3	Lot 27	5
		7	Lots 5, 6	5
2 N.	101 W.	12	NWSE	10

Table I-2 continued

Township	Range	Section	Subdivision	Approximate Acreage
		14	Lots 4, 5	3
		23	Lots 1, 3, 4, SWSW	60
		26	W½NW	30
		33	Lots 14, 15	15
		34	Lot 12	1
3 N.	99 W.	31	Lot 33	1
		32	Lots 13, 15	12
1 S.	97 W.	11	E½NW	15
		21	E½SE	10
		28	SWNE, NESW	5
2 S.	96 W.	31	Lot 1, SWNE, NESE	15
		32	N½S½	20
		33	SESW	5
2 S.	97 W.	22	SWNE, NWNW, E½SE	20
		25	Lots 11, 13	5
		26	Lot 3, NWNW	10
3 S.	95 W.	7	SESW, S½SE	1
		8	SWSW	20
		14	SWSW	5
		15	NESE	15
		23	SWNE, NENW	10
		36	SENW	5
3 S.	96 W.	2	SWSW	15
		3	Lot 4, S½NE	10
		11	SENE	5

Table I-2 continued

Township	Range	Section	Subdivision	Approximate Acreage
		12	NWSW	5

Table I-3. Category I Disposal Lands
Public Lands with Private Permanent or Semi-Permanent Structures

Township	Range	Section	Subdivision	Approximate Acreage
2 N.	99 W.	6	Lot 22	3.35
2 N.	100 W.	8	Lot 13	7.85
3 S.	100 W.	8	SW¼NW¼NW¼SW¼, W½SW¼NW¼SW¼	7.5

Table I-4. Category I Disposal Lands - Rangely Expansion Tracts

Township	Range	Section	Subdivision	Acreage	Alternative
1 N.	101 W.	4	W½NENE, NWNE, NWSWNE, S½NW	80	B, C, D
		5	Lot 5, SENE	50.81	B, C, D
		6	Lots 3, 4, 12, 14*, 19, 20, 30, 31, 32, 34, 35, 36, 37	193.83	B, C, D
		7	Lots 1, 8	58.13	B, C, D
1 N.	102 W.	1	NESE	40	B, C, D
		2	Lots 10, 23	19.98	B, C, D
		3	Lot 14	28.82	B, C, D
		4	Lots 2, 4, 6, NWNE, N½NW	145.76	A
		4	Lots 13, 14	37.75	B, C, D
		5	Lots 2, 3, W½NE, E½NW, E½SW, SESENW, SW, W½NESWSW, S½SWSW, NWSE	341	A
		6	E½SE	80	A
		7	Lot 5	13.01	A
		8	Lots 3, 6, 12	23.07	A
		9	Lots 1, 2, 5, 6, NENE, S½NE	222.81	B, C, D

Talbe I-4 continued

Township	Range	Section	Subdivision	Acreage	Alternative
2 N.	101 W.	33	Lots 14, 15	54.92	B, C, D

* That portion of Lot 14 encumbered by authorizations
A= 602.84 related to the Rangely Water Treatment Plant
B, C, D= 787.05

CATEGORY II LANDS

Category II lands are those public lands that could be disposed of through means other than sales under section 203 of the *Federal Land Policy and Management Act* (FLPMA) of 1976, Agricultural Entries, and Indian Allotments. Specific tracts within Category II lands have not been identified.

Exchanges would be the preferred method for accomplishing land ownership adjustments of Category II lands. To be considered for exchange, FLPMA specifies that public interest will be well served. The values and objectives that the federal lands may serve if retained may not be greater than the values and objectives that the non-federal lands may serve if acquired. Fourteen factors would be considered in evaluating the relative values of parcels in exchange proposals:

1. Water values, such as riparian, wetland, floodplain values, and fisheries.
2. Wildlife values, including T&E habitat, nesting and/or breeding habitat, and key big game seasonal habitat.
3. Special Management Areas, such as WSAs, ACECs, RNAs, and SRMAs.
4. Wild Horse Habitat Management Areas.
5. Areas having high potential for energy/mineral development and recreational development and use.
6. Significant cultural resource values, or historical values.
7. Areas that support outstanding visual resources.
8. Socio-economic considerations, such as potential stabilizing effects on social or economic conditions, suitability for community expansion or economic development, the probability/potential for such developments to take place, and availability of suitable private properties.
9. Existing encumbrances, such as withdrawals, land use authorizations, conflicting leases, mining claims, etc.
10. Accessibility for use by the public.
11. Cost and difficulty of management.
12. Degree of current and past public expenditure.
13. Existing land ownership patterns.
14. Suitability for management by another agency.

BLM would strive to retain and acquire lands that support those resource values identified in 1 through 7, above. Where parcels of land are selected by more than one proponent, competitive exchange procedures would be used.

CATEGORY III LANDS

Category III lands are those public lands that have been identified for retention in federal ownership. These lands would not be disposed of by any means. Table I-5 lists Category III lands by alternative:

Table I-5. Category III Lands to be Retained in Federal Ownership

Identified Lands	Acres	Alt A	Alt B	Alt C	Alt D
Bull Canyon, Skull Creek, Willow Creek, Black Mountain, Windy Gulch, and Oil Spring Mountain WSAs	81,296[1/]	x	x	x	x
Bull Canyon, Willow Creek, and Skull Creek Wilderness Areas[2/]	41,253	x	x	x	x
Designated ACECs: Deer Gulch, Lower Greasewood Creek, South Cathedral Bluffs, Dudley Bluffs, Yanks Gulch/Upper Greasewood, Raven Ridge	7,684	x	x	x	x
Proposed Addition to South Cathedral Bluffs ACEC	2,251			x	
Proposed Addition to Raven Ridge ACEC	1,689			x	x
Proposed Addition to Ryan Gulch ACEC	620			x	x
Soldier Creek Proposed ACEC	2,251		x		
White River Riparian Proposed ACEC (including Beefstake Gulch)[3/]	950				x
Coal Oil Rim Proposed ACEC	3,200			x	x
Moosehead Mountain Proposed ACEC	10,690			x	x
Oil Spring Mountain Proposed ACEC	17,740			x	x
Black's Gulch Proposed ACEC	800			x	x
Coal Draw Proposed ACEC	1,850			x	x
Texas-Missouri-Evacuation Creek Proposed ACEC	22,580			x	
East Douglas Creek Proposed ACEC[3/]	67,584			x	x
Duck Creek Proposed ACEC	3,430			x	x
Black Mountain and Windy Gulch SRMA	2,206		x	x	
Piceance Basin SRMA	268,091	x			
Lower White River/Kenney Reservoir SRMA	4,890		x	x	x
Rangely SRMA	410,830		x	x	

1/ Includes 1,995 acres outside the WSA boundaries that have been recommended for wilderness designation (see Wilderness Section, Chapter 2).
2/ Assumes these WSAs would be designated by Congress as wilderness.
3/ Except for those parcels specifically identified as Category I lands.

WITHDRAWALS

COAL WITHDRAWALS

Approximately 364,337 acres of land are currently withdrawn under the various *Coal Land Withdrawals of 1910*, including lands that have since been transferred to private ownership. Although these lands are "withdrawn from settlement, location, sale or entry, and reserved for classification and appraisement with respect to coal resources," they are open to location under the mining laws for metalliferous minerals only (*43 U.S.C. 142*). They also are open for entry under the *Desert Land Act*, selection under the *Carey Act*, or withdrawal under the *Reclamation Act* (*30 U.S.C. 85*). These lands were opened to entry under the Homestead laws, but the laws have since been repealed. Table I-6 lists all lands currently withdrawn under the various Coal Land Withdrawals of 1910.

Table I-6. Coal Withdrawals

Sixth Principal Meridian Township, Range, Section, Subdivision	Sixth Principal Meridian Township, Range, Section, Subdivision
T. 1 N., R. 101 W., Sec. 2, NWNE, NW Sec. 3, N½, SW, N½SE Sec. 4, NENE, S½NE, SENW, S½ Sec. 5, E½SE Sec. 8, E½E½ Sec. 9, N½, N½S½, SESW Sec. 10, N½NW	T. 1 S., R. 101 W., Entire Township
T. 2 N., R. 92 W., Sec. 5, Lots 2, 6, 13, E½SW Sec. 8, NENW, S½NW, N½SW, SWSW Sec. 17, Lots 1, 2, 7, 8, NWNW Sec. 18, Lots 6, 7, 10 Sec. 19, Lots 5, 8, 9 Sec. 20, Lots 2, 3, 5-8 Sec. 29, Lots 4-7, 18-20, NWSW Sec. 31, S½SE Sec. 32, Lot 5, SWNE, E½W½, SWSW, SE	T. 1 S. R. 102 W., Entire Township
T. 2 N., R. 101 W., Sec. 7, Lot 4, SESW, S½SE Sec. 8, SWSW Sec. 10, Lot 3 Sec. 14, Lots 2-9 Sec. 15, Lots 1-7, SWNE, SW, W½SE Sec. 16, SWNW, S½ Sec. 17, NWNE, S½NE, S½N½, S½ Sec. 18, ALL Sec. 19, Lots 1-3, NE, E½NW, NESW, N½SE Sec. 20, N½, E½SW, SE Sec. 21, ALL Sec. 22, ALL Sec. 23, Lots 1-4, S½SW, SWSE Sec. 26, W½NE, W½, SE Sec. 27, ALL Sec. 28, ALL Sec. 29, NE, E½SE Sec. 33, Lot 15 Sec. 34, Lots 1-4, 6-12, SESW, NESE, S½SE Sec. 35, N½, SW, N½SE, SWSE Sec. 36, NWNE, N½NW, SWNW	T. 1 S., R. 103 W., Entire Township
T. 2 N., R. 102 W., Sec. 2, Lots 3, 4, S½NW, NWSW, S½SW, SWSE Sec. 3, ALL Sec. 4, Lots 1-4, S½N½, SW, NWSE, SESE Sec. 5, Lots 1-4, S½N½, SW, NESE Sec. 9, E½NE, NESE Sec. 10, N½, SW, N½SE, SWSE Sec. 11, NWNE, S½NE, NW, S½ Sec. 12, SWNE, S½NW, S½ Sec. 13, ALL Sec. 14, N½, N½SW, SESW, SE Sec. 15, E½NE Sec. 23, NENE Sec. 24, N½NE, SENE, NWNW	

Table I-6 continued

Sixth Principal Meridian Township, Range, Section, Subdivision	Sixth Principal Meridian Township, Range, Section, Subdivision
T. 2 N., R. 103 W., Sec. 6, Lots 4-7, SENW, E½SW	T. 2 S., R. 101 W., Entire Township
T. 2 N., R. 104 W., Sec. 1, NE, NENW, NESE	T. 2 S., R. 102 W., Entire Township
T. 3 N., R. 98 W., Sec. 4, Lots 7, 8, S½NW, SW Sec. 5, Lot 5, SENE, SESW, SE Sec. 6, SESE Sec. 7, Lots 6-8, S½NE, SENW, E½SW, SE Sec. 8, NWNE, N½NW, SWNW Sec. 18, Lots 5-8, E½W½, SWSE Sec. 19, Lots 5-8, NE, E½W½, N½SE, SWSE Sec. 20, SWNW Sec. 30, Lots 5-7, 9, 11, 13, 15, 16, 17, 19, 20, 22	T. 2 S., R. 103 W., Entire Township
T. 3 N., R. 99 W., Sec. 12, SE Sec. 13, E½ Sec. 19, Lot 8 Sec. 24, E½, S½SW Sec. 25, Lots 3, 5, 6, 8, 10, 11, 13, 16, 18, 19 Sec. 26, Lots 9, 11, 13, 15, 17, 18, 20, 22, 24, 26 Sec. 27, Lots 3-14, 18, 20, 22, SWNE, S½NW Sec. 28, S½N½, N½S½ Sec. 29, S½N½, N½SE Sec. 30, N½NE, SENE, NENW	T. 3 S., R. 100 W., Entire Township
T. 3 N., R. 100 W., Sec. 16, Lots 13-16, SWSW Sec. 17, S½S½ Sec. 18, Lot 8, SESW, S½SE Sec. 21, N½NE Sec. 22, S½NE, N½NW, SENW, NESE Sec. 23, N½SW, NWSE, S½SE Sec. 24, S½S½	T. 3 S., R. 101 W., Entire Township
T. 3 N., R. 101 W., Sec. 7, Lots 2-4, SENW, E½SW, SE Sec. 8, S½S½ Sec. 13, S½S½ Sec. 14, S½S½ Sec. 15, N½S½, SESE Sec. 16, S½NW, NESW, N½SE Sec. 17, N½NE, SENE	T. 3 S., R. 102 W., Entire Township

Table I-6 continued

Sixth Principal Meridian Township, Range, Section, Subdivision	Sixth Principal Meridian Township, Range, Section, Subdivision
T. 3 N., R. 102 W., Sec. 8, SESW, S½SE Sec. 9, SW, N½SE Sec. 10, NE, NENW, S½NW, N½S½ Sec. 11, N½, N½S½ Sec. 12, S½N½, N½S½ Sec. 16, W½W½, NENW Sec. 17, ALL Sec. 20, ALL Sec. 21, SWNE, NW, S½ Sec. 26, SWNW, SW Sec. 27, S½N½, S½	T. 3 S., R. 103 W., Entire Township
T. 3 N., R. 102 W., Sec. 28, ALL Sec. 29, ALL Sec. 32, N½, NESW, S½SW, SE Sec. 33, ALL Sec. 34, ALL Sec. 35, W½NE, W½	T. 4 S., R. 100 W., Entire Township
T. 3 N., R. 103 W., Sec. 18, Lots 3, 4 Sec. 19, Lots 1-4 Sec. 30, Lots 1-4 Sec. 31, Lot 1	T. 4 S., R. 101 W., Entire Township
T. 3 N., R. 104 W., Sec. 2, SWSW Sec. 3, Lots 3, 4 Sec. 10, Lot 1 Sec. 11, W½NW, SENW, E½SW, W½SE, SESE Sec. 12, SWSW Sec. 13, S½NE, NW, S½ Sec. 14, E½, E½W½, W½SW Sec. 23, E½, NENW Sec. 24, ALL Sec. 25, ALL Sec. 26, E½, E½W½, SWNW, NWSW Sec. 35, NE, NENW, NESE Sec. 36, ALL	T. 4 S., R. 102 W., Entire Township
	T. 4 S., R. 103 W., Entire Township

OIL SHALE WITHDRAWALS

Approximately 491,734 acres of public lands are currently withdrawn "from lease or other disposal" and are closed to the mining laws. Disposals under any authority are precluded. These lands are, however, open to operation of the mineral leasing laws. An exception is sodium leasing.

The leasing of sodium may only take place where it can be shown that development of the sodium deposits would not adversely affect oil shale values. Table I-7 lists the lands withdrawn for oil shale under *Executive Order 5327*, dated April 15, 1930 (only those lands owned by the United States that lie within the following described lands are withdrawn).

Table I-7. Oil Shale Withdrawals

Sixth Principal Meridian Township, Range, Section, Subdivision	Sixth Principal Meridian Township, Range, Section, Subdivision
T. 1 N., R. 95 W., Secs. 26 to 29, and 31 to 33.	T. 5 S., R. 96 W., Secs. 1 to 36.
T. 1 N., R. 96 W., Secs. 5 to 8, 15 to 23, and 26 to 36.	T. 1 S., R. 97 W., Secs. 1 to 36.
T. 1 N., R. 97 W., Secs. 1 to 36.	T. 2 S., R. 97 W., Secs. 1 to 36.
T. 2 N., R. 97 W., Secs. 19, 20, and 23 to 36.	T. 3 S., R. 97 W., Secs. 1 to 36.
T. 1 N., R. 98 W., Secs.1 to 36.	T. 4 S., R. 97 W., Secs. 1 to 36.
T. 2 N., R. 98 W., Secs. 6 to 10, and 13 to 36.	T. 5 S., R. 97 W., Secs. 1 to 36.
T. 1 N., R. 99 W., Secs. 1 to 36.	T. 1 S., R. 98 W., Secs. 1 to 36.
T. 2 N., R. 99 W., Secs. 1 to 5, and 8 to 36.	T. 2 S., R. 98 W., Secs. 1 to 36.
T. 1 N., R. 100 W., Secs. 1, 12, 13, 23 to 26, and 33 to 36.	T. 3 S., R. 98 W., Secs. 1 to 36.
T. 2 N., R. 100 W., Sec. 36.	T. 4 S., R. 98 W., Secs. 1 to 36.
T. 1 S., R. 94 W., Secs. 19, 30, and 31.	T. 5 S., R. 98 W., Secs. 1 to 36.
T. 2 S., R. 94 W., Secs. 6, 7, 18, 19, 30, and 31	T. 1 S., R. 99 W., Secs. 1 to 36.
T. 3 S., R. 94 W., Secs. 6 to 8, 17 to 20, and 29 to 32.	T. 2 S., R. 99 W., Secs. 1 to 36.
T. 4 S., R. 94 W., Secs. 4 to 9, 16 to 23, and 26 to 36.	T. 3 S., R. 98 W., Secs. 1 to 36.
T. 1 S., R. 95 W., Secs. 1 to 36.	T. 4 S., R. 99 W., Secs. 1 to 36.
T. 2 S., R. 95 W., Secs. 1 to 36.	T. 5 S., R. 99 W., Secs. 1 to 36.
T. 3 S., R. 95 W., Secs. 1 to 36.	T. 1 S., R. 100 W., Secs. 1 to 5, 9 to 16, 21 to 28, and 33 to 36.
T. 4 S., R. 95 W., Secs. 1 to 36.	T. 2 S., R. 100 W., Secs. 1 to 4, 9 to 16, 22 to 27, 35, and 36.
T. 5 S., R. 95 W., Secs. 1 to 36.	T. 3 S., R. 100 W., Secs. 1, 2, 12, 13, and 24.
T. 1 S., R. 96 W., Secs. 1 to 36.	T. 4 S., R. 100 W., Secs. 11 to 17, and 19 to 36.
T. 2 S., R. 96 W., Secs. 1 to 36.	T. 5 S., R. 100 W., Secs. 1 to 36.
T. 3 S., R. 96 W., Secs. 1 to 36.	T. 4 S., R. 101 W., Secs. 25, 26, 35, and 36.
T. 4 S., R. 96 W., Secs. 1 to 36.	T. 5 S., R. 101 W., Secs. 1, 2, 11 to 14, 23 to 26, 35, and 36

WATERPOWER AND RESERVOIR RESOURCE WITHDRAWALS

Approximately 2,200 acres are currently withdrawn for power site purposes. These lands were withdrawn pursuant to the Act of June 25, 1910, by *Executive Order of July 2, 1910*, and are reserved from entry, location, or other disposal under the laws of the United States, except for location of minerals under the mining laws. Subsequent action on 656 acres of the withdrawn lands opens them to the operation of all applicable public land laws, subject to the conditions of Section 24 of the *Federal Power Act* (*16 U.S.C. 8184*). Table I-8 lists the waterpower and reservoir resource and Table I-9 denotes land opened to operation of land laws.

Table I-8. Waterpower and Reservoir Resource Withdrawals

Sixth Principal Meridian Township, Range, Section, Subsection	Sixth Principal Meridian Township, Range, Section, Subsection
Power Site Reserve No. 31 T. 2 N., R. 100 W., Sec. 6, lots 14, 15, 17; Sec. 7, lots 5, 6. T. 2 N., R. 101 W., Sec. 1, lots 6, 7; Sec. 11, lots 5, 8; Sec. 12, lots 6, 7; Sec. 32, lots 1, 2. T. 1 N., R. 102 W., Sec. 7, lots 1, 8, 9. T. 1 N., R. 103 W., Sec. 10, lots 3, 8; Sec. 11, lots 1, 2, 3, 5, 6, S1/2NW; Sec. 12, lots 1*, 2*, 3, 5*, 6*, 9, 13, 14; Sec. 16, lots 1, 3, 4, 7, S1/2NE; Sec. 17, lot 5, SWNW; Sec. 18, lots 1, 2, 9. T. 1 N., R. 104 W., Sec. 24, lots 2, 3, 5, 9, W1/2NE, SESW; Sec. 25, lots 7, 8*, 10*; Sec. 26, lots 4, 8, SWNW, NWSW; Sec. 27, lot 3.	Power Site Reserve No. 124 T. 1 N., R. 90 W., Sec. 19, lots 7*, 12*; Sec. 20, lots 3*, 4*, 5*, 6*, 7*, 13*; Sec. 21, lot 5*; Sec. 30, lots 6, 7*, 9, 10, E1/2SW, NWSE*. T. 1 N., R. 91 W., Sec. 25, lot 8: Sec. 36, lots 11*, 12*, 19*, 27*, 31*, 32*, 33*, 34*, 35*, 36*, 38*, 39*, 52*, 59*, 60*, NENE* T. 2 S., R. 90 W., Sec. 6, lot 4*. T. 1 S., R. 91 W., Sec. 3, SWSW*; Sec. 4, SESW. Power Site Reserve No. 176 T. 1 N., R. 91 W., Sec. 22, lots 3, 4, 13, 14, 18; T. 1 N., R. 91 W., Sec. 25, lots 5*, 9*, 10*.

Table I-9. Land Opened to Operation of Land Laws

Powersite Reserve	Existing Withdrawal (Acres)	Acres Opened
31	1,585.14	206.16
124	559.10	371.52
176	116.43	54.09
Total	**2,260.67**	**631.77**

MULTIPLE USE SEGREGATED LANDS

Approximately 2,337.72 acres are classified for multiple use management pursuant to the Act of September 19, 1964. They are segregated from appropriation under the agricultural land laws, sales under *RS 2455* (both of which were repealed by FLPMA) and from the operation of the general mining laws (*30 U.S.C. 21*). Table G-10 lists the multiple use segregated lands.

Table G-10. Multiple Use Segregated Lands

Sixth Principal Meridian Township, Range, Section, Subsection	Sixth Principal Meridian Township, Range, Section, Subsection
T. 1 N., R. 96 W., Sec. 25, Lots 16, 17, 20, 22	T. 3 N., R. 100 W., Sec. 13, SW¼
T. 1 N., R. 102 W., Sec. 7, Lot 9 Sec. 12, S½SW¼ Sec. 13, N½NW¼	T. 3 N., R. 102 W., Sec. 5, N½SE¼,NE¼
T. 1 N., R. 103 W., Sec. 12, Lots 5, 6, 9 (now 16)	T. 4 N., R. 100 W., Sec. 24, S½NE¼
T. 2 N., R. 101 W., Sec. 11, Lots 3, 4, 5, 8, 9, 10	T. 5 N., R. 99 W., Sec. 25, NW¼SW¼, SE¼SW¼, S½SE¼
T. 2 N., R. 103 W., Sec. 4, S½	T. 5 N. R. 100 W., Sec. 12, SE¼ Sec. 13, E½ Sec. 24, E½

PUBLIC WATER RESERVE WITHDRAWALS

Scattered throughout the resource area are approximately 5432 acres of land which were withdrawn by *Executive Order of April 17, 1926*, for Public Water Reserve No. 107, under the authority of Section 1 of the Act of June 25, 1910, and Section 10 of the Act of December 29, 1916. Under the provisions of the latter authority (*43 U.S. C. 300*), "every smallest legal subdivision of the public land surveys which is vacant, unappropriated, unreserved public land and contains a spring or waterhole, and all land within one quarter of a mile of every spring or waterhole located on unsurveyed public land" was withdrawn from settlement, location, sale, or entry and reserved for public use. In terms of the *Mining Law of 1872*, these lands are open to location for metalliferous minerals only.

AIR NAVIGATION SITES

Ten acres of public land near Rangely, Colorado, are withdrawn as Air Navigation Sites:
T. 1 N. R. 101 W., Sec. 4, NE¼NW¼NE¼SW¼, Sec. 5, NE¼NW¼SW¼NW¼, SW¼SW¼NW¼SE¼. T. 2 N., R. 101 W., Sec. 29, NE¼NW¼SE¼SE¼.

They are withdrawn from all forms of appropriation under the public land laws, including the mining laws, but not including those laws governing use of the land under leases, licenses and permits, or governing disposal of mineral or vegetative resources (other than under mining laws).

DEPARTMENT OF ENERGY WITHDRAWAL

Two hundred acres of public lands, and 160 acres of federal minerals (underlying private surface) were withdrawn from all forms of disposition under the public land laws, including the mining laws, and the mineral leasing laws. This site was withdrawn as a part of the Rio Blanco Gas Stimulation Project, which included underground detonation of nuclear explosives. Although the withdrawal has expired, no opening orders have been issued, and, due to possible contamination, the lands will not be opened; a new withdrawal is anticipated. Table I-11 lists these lands:

Table I-11. Anticipated Energy Withdrawal Lands

Public Lands Sixth Principal Meridian Township, Range, Section, Subsection	Public Minerals (Private Surface) Sixth Principal Meridian Township, Range, Section, Subsection
T. 3 S., R. 98W. Sec. 10, SE¼SE¼; Sec. 11, SW¼SW¼; Sec. 14, NW¼NW¼; Sec. 15, E½NW¼	T. 3 S., R. 98W. Sec. 11, SE¼SW¼; Sec. 14, E½NW¼, SW¼NW¼

OIL SHALE OWNERSHIP ADJUSTMENTS

At various times during the energy crises of the 1970s and early 1980s, several oil companies expressed an interest in exchanging oil shale resources with the BLM to block up non-federal logical mining units. For various reasons, none of the expressions or subsequent applications resulted in an exchange. One of the applications (Superior Oil Company) was denied in 1980.

In a June 1991 agreement reached between Marathon Oil Company, et al., and the U.S. Department of the Interior, the BLM was committed to address land and mineral ownership adjustments (exchanges) in this document. In return, Marathon would put the patent for 982.92 acres of land in Rio Blanco County, CO, known as the Portland Mining Claims Numbers 1 through 6, in an escrow account until June 1994. The BLM could continue to manage these lands as public lands until that date.

The BLM Fee Exchange Policy for Leasable and Salable Minerals is one of the screens used to determine the public interest of a proposal. The policy contains 14 elements that are to be considered in every fee exchange proposal that involves leasable and salable minerals. Recent rewording of the preamble to the elements has softened their application, in that now, failure to meet any one or more of the elements would not preclude an exchange, which would otherwise be found in the public interest.

It is difficult to assess the impact of these policy elements on an area without tying them to a specific exchange proposal. However, based on past expressions of interest and knowledge of the lands that could be offered by interested parties, an attempt can be made to analyze the elements to arrive at a public interest determination. The exchange valuation method for oil shale resources requires that only resource equivalent for resource equivalent proposals be entertained. In addition, there are other requirements that limit the proposals to the same geographical area. Therefore, only lands within and adjacent to the White River Resource Area portion of the Piceance Basin were considered in this analysis.

Much of the fee mineral ownership in the central part of the Piceance Basin consists of long and narrow strips located in creek or drainage bottoms. The drainages in the northern part of the basin are structurally controlled by a regional fracture pattern (forming a trellis drainage pattern). Therefore, the oil shale beds below the drainages are believed by some authorities to be fractured and unsuitable for underground mining purposes. These lands were patented under the various homesteading laws. However, most have been purchased by major oil companies in order to secure water rights for potential oil shale development. Many of these lands have been cultivated into hay meadows and some contain structures such as houses, barns and other out buildings. Nearly all these lands are included as base property for securing BLM grazing permits. The other type of fee ownership in the Piceance Basin resulted from the patenting of oil shale mining claims. The claims were located around the western and southern peripheral edges of the basin where the oil shale resource was structurally exposed. The quality of resource is inferior in these areas to the oil shale remaining in federal ownership in the central portion of the basin. This is likely one of the reasons why there has been the interest shown in exchanging oil shale lands.

Appendix I

The 14 policy elements used in determining public interest for Fee mineral exchanges are listed below, followed by a brief analysis of each:

1. The exchange would consolidate federal holdings into a logical mining unit.

   Analysis: Current ownership patterns would allow for the creation of federal logical mining units virtually throughout the central part of the basin. An exchange proposal could not comply with this element.

2. The exchange would consolidate non-federal holdings into a logical mining unit.

   Analysis: The principal reason for proposing an exchange would be to consolidate non-federal holdings into logical mining units. Consequently, exchange proposals would likely meet this element.

3. The exchange would serve a national resource management or protection need.

   Analysis: Certain fee lands could be offered that contain high potential riparian habitat and habitat for Threatened and Endangered plant species. Inventories are not known to have been conducted on most fee lands for other resources that may warrant a management or protection need. Some proposals could offer lands that contain resources that may meet the requirement for this element.

4. The exchange would simplify jurisdiction and allow federal land use planning efforts to be confined to an area in which the United States controls the mineral development.

   Analysis: Current ownership patterns would preclude non-federal commercial oil shale development in the central part of the basin. Therefore, large-scale exchanges that would provide non-federal logical mining units within this area would have an opposite effect on simplifying jurisdiction for federal land use planning purposes and consequently, this element could not be met.

5. The exchange would reunite federal surface and subsurface estates.

   Analysis: Although there are split estate lands within the oil shale withdrawal, the acreage is limited and reuniting the two estates has not been a priority or an identified objective in land use plans. It is possible that small scale exchanges could meet this element.

6. The exchange would eliminate isolated tracts and checkerboard patterns of federal minerals.

   Analysis: There are very few isolated tracts and no checkerboarded land patterns within the Piceance Basin oil shale withdrawal area. Therefore, this element could not be met.

7. The exchange would achieve a management goal without using appropriated funds to pay for the resources needed by the United States.

   Analysis: The only management goal identified within the affected land use plans that would require the expenditure of appropriated funds would be to secure public access to BLM lands. A proposal could meet this element if the lands identified for access easement acquisition were included in the application.

8. The exchange would meet the needs of state and local people.

   Analysis: Providing added acreage to form additional non-federal logical mining units seemsto be contrary to the interest of the state due to the loss of half any bonus bids and royalties that would accrue from a federal leasing program. Since most of the fee lands are used as base property for federal grazing permits, it also would seem likely that local people would consider a proposal to offer these lands in an exchange as not being in their interest. However, the possibility of realizing increased employment and tax base may outweigh these effects. Because of political implications, it is not possible to determine whether this element would meet a public interest determination at this time.

9. The non-federal lands offered would serve the public better in public ownership than the minerals to be transferred in the exchange.

   Analysis: Some non-federal lands contain habitat for Threatened and Endangered (T/E) plant species and high potential riparian habitat. An indepth economic and environmental analysis would need to be undertaken on specific proposals to determine whether the public interest is better served in protecting sensitive resources or developing adjacent mineral resources.

10. The exchange would enhance competitive bidding for the federal minerals.

    Analysis: Over 349,000 acres of oil shale mining claims have already been patented in the Piceance Basin. Providing exchanges that would further develop additional non-federal logical mining units for many larger oil and gas companies could not help but make future federal lease tracts less competitive. An exchange proposal could not meet this element.

11. The potential revenue from a lease or sale of the federal minerals consolidated by the exchange would be greater than the potential revenue from a lease or sale of the minerals in federal ownership prior to the exchange.

    Analysis: The only way this element could be met is if lands containing associated sodium minerals were offered in exchange for lands that did not contain the associated minerals. However, the equal value for equal value requirement for fee mineral exchanges would have to be met for all proposals.

12. The exchange would be in keeping with the purposes, policies, and goals of the National Environmental Policy Act (NEPA) of 1969.

    All formal exchange applications would be subjected to a site specific analysis conducted in conformance with the NEPA, including the solicitation of public comments on the proposal.

13. The exchange does not involve a transfer of a fee interest in federal minerals for a less than fee interest in the non-federal lands.

    Analysis: Some exchange proposals in the past included less than 100 percent interest in the offered lands. The BLM policy is to not become a joint interest holder in surface or mineral estates. Proposals that included only partial interests or agreements, such as conservation or scenic easements would not meet this element.

14. (This element deals with the potential exchange of coal resources and does not apply to the exchange of oil shale and associated minerals.)

    Analysis: No analysis was undertaken for this element.

Based upon the above analysis, elements 1, 4, 6, 8, and 10 all contain provisions that would cause an exchange proposal not to meet an element. The remaining elements appear not to present an obstacle to oil shale exchanges. The primary reason for the negative effect resulting from the five elements appears to be related to the fact that: (1) the BLM lands occur in a massive block with few isolated parcels; (2) there are no extraordinary resource values that would meet a priority or protection need occurring on the fee lands, and (3) because of the existing land ownership pattern, it does not appear that the resource equivalent for resource equivalent requirement can be met. All exchange proposals would continue to be accepted and evaluated based on their relative merits of meeting the public interest determination. However, if proposals cannot affirmatively respond to elements 1, 4, 6, 8, and 10, or if the proposal would be large enough to enable the formation of a non-federal LMU, then the proposal would be found not to be in the public's best interest at this time.

APPENDIX J
WILD AND SCENIC RIVER STUDY REPORT

INTRODUCTION

This study report describes the purpose, background, methods, personnel involved, and schedule for the wild and scenic assessment of streams and rivers in the White River Planning Area. All of the rivers and river segments in the resource area were considered for eligibility. A total of 12 stream and river segments were determined to have values warranting further eligibility analysis; a complete listing of those segments is shown in Attachment 1. The wild and scenic river study was conducted between December 12, 1990 and June 30, 1993. This report includes basic physical and biological descriptions of each stream or river corridor, analysis of the potential for meeting wild and scenic eligibility criteria, classification of various segments, suitability determinations, and an evaluation by the study team.

PURPOSE

The *Wild and Scenic Rivers Act* (*W&SR Act*) (*P.L. 90-542*) was passed by Congress in 1968, instituting a legislative program to study and protect free-flowing river segments by making them part of the National Wild and Scenic Rivers System (NWSRS). Congress did not intend to protect every remaining free-flowing American river, but rather sought to conserve a representative sample of many of our most important natural and recreational rivers.

Directives for integrating wild and scenic rivers studies within the resource management planning process are provided in BLM Manual 8351. The initial scoping and identification of eligible rivers, streams and stream segments was completed as part of the planning process for the White River Resource Management Plan (RMP), as required in BLM Manual 8351.

BACKGROUND

The *W&SR Act* requires a river or river segment to be free-flowing and, within its immediate environment, to have at least one outstandingly remarkable value. This section discusses eligibility determination, classification categories, and suitability criteria.

The boundaries of any river proposed for potential addition to the NWSRS, as specified in Section 4(d) of the *W&SR Act*, are usually limited to that area measured within one-quarter mile of the ordinary high-water mark on each side of the river. This boundary, by Section 3(b) of the *W&SR Act*, may vary on either side of the river and be narrower or wider as long as the total corridor width averages no more than 320 acres (half of a mile or 2,640 feet wide) per river mile.

After determining eligibility of a river for inclusion in the NWSRS, it must be tentatively classified according to the category (wild, scenic, or recreational) most appropriate for each eligible segment. For clarification, a "scenic" river may be designated for reasons other than scenery, and a "recreational" river may not necessarily have outstandingly remarkable recreational resources. Classification is based on the degree of naturalness and the extent of development of the river and the adjacent lands as they exist at the time of the study. Classifying a study river as wild, scenic, or recreational does not segregate nor withdraw the subject lands, but rather recommends a level of protective management for Federal lands in the study area until a decision on designation is made by Congress. Guidance provided in the 1982 Final Revised Guidelines for Eligibility, Classification, and Management of River Areas will be used for interim management. If Congress designates a river or river segment, management would be according to the classification. Congress may classify a river segment at or below the highest level for which it qualifies. Specific management strategies may vary according to classification, but would be designed to protect and enhance the outstandingly remarkable value(s) of the river area. These specific management strategies are formulated during development of the management plan, which is required within three fiscal years of designation (Section 3 (d)(1), *W&SR Act*).

ELIGIBILITY CRITERIA

FREE-FLOWING

Free-flowing, as defined in Section 16 (b) of the *W&SR Act* means "existing or flowing in a natural condition without impoundment, diversion, straightening, riprapping or other modification of the waterway."

There are no specific requirements regarding the length or flow of an eligible river segment. Free-flowing should not be confused with naturally-flowing (i.e., flowing without any upstream human-influenced manipulation). The presence of impoundments above and below the segment, including the impoundments that influence the flow through the study segment, and existing minor dams and diversion structures within the study reach will not, by themselves, render a river ineligible. There are many segments within the NWSRS downstream from major dams, such as the Rogue River in Oregon and the lower Klamath River in California, or between dams, such as the Tuolommne River in California or the Rio Chama in New Mexico. Some components of the system, such as the Clackamas, Deschutes, and Snake Rivers in Oregon and the Trinity River in California, even derive their recreational values, at least in part, from the operation of upstream dams.

OUTSTANDINGLY REMARKABLE VALUES

The second criteria a river must meet to be eligible for inclusion in the NWSRS is the presence of one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. The term "outstandingly remarkable" is not precisely defined in the *W&SR Act*, consequently, the determination of whether or not a river area contains outstandingly remarkable value(s) is based on the professional judgement of the interdisciplinary team. The value(s) must be river-related and are considered outstandingly remarkable if they are unique or exemplary compared to similar values in other river areas in the region. Outstandingly remarkable features should be at least regionally significant; the region considered in this analysis was the State of Colorado.

CLASSIFICATION CATEGORIES

The three classification categories for eligible river and river segments are defined in Section 2(b) of the 1968 *W&SR Act* as:

WILD RIVER AREAS

Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These areas represent vestiges of primitive America.

SCENIC RIVER AREAS

Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

RECREATIONAL RIVER AREAS

Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

A wild river would be a very undeveloped river with limited access. A scenic classification would be applied to a river or river segment that is more developed than a wild river and less developed than a recreational river. A recreational classification would be appropriate in developed areas, such as where a river runs parallel to roads or railroads with adjacent lands that have agricultural, forestry, commercial, or other developments, provided the waterway remains generally natural and riverine in appearance.

Water quality, water resources development, shoreline development, and accessibility are the criteria considered when determining classification. Each criterion is important, but the collective significance of all criteria is more important. Although each classification permits existing development, the criteria do not imply that additional inconsistent development on public lands is

permitted in the future. New developments compatible with designation are allowed, provided they are accomplished in an environmentally sound manner.

It is important to note that designation as a wild and scenic river does not mean that restrictions are automatically imposed upon private land.

Attachment 2 describes the criteria of each classification category in greater detail.

SUITABILITY CRITERIA

The Department of the Interior Guidelines for fulfilling requirements of the *W&SR Act*, dated May 19, 1992, suggest the following eight factors for consideration in a suitability analysis. Suitability determination need not be limited to only these factors:

1. Characteristics which do or do not make the area a worthy addition to the National Wild and Scenic Rivers System.

2. Status of landownership, minerals (surface and subsurface), use in the area, including the amount of private land involved, and associated or incompatible uses. Jurisdictional consideration must be taken into account to the extent that management would be affected.

3. Reasonably foreseeable potential uses of the land and related waters which would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRS.

4. Federal, public, state, tribal, local, or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local, or other agencies and individuals.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and administering the area if it is added to the NWSRS. Section 6 of the *W&SR Act* outlines policies and limitations of acquiring lands or interests in land by donation, exchange, consent of owners, easement, transfer, assignment of rights, or condemnation within and outside established river boundaries.

6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river, or other mechanisms (existing and potential) to protect identified values other than WSR designation.

7. Historical or existing rights which could be adversely effected. In determining suitability, consideration of any valid existing rights must be afforded under applicable laws (including the Wild and Scenic River Act), regulations, and/or policies.

8. Other issues and concerns, if any.

METHODS USED FOR THE WILD AND SCENIC RIVER STUDY REPORT

The White River and its tributaries dominate the resource area. The White River was divided into the following five segments:

1. North Fork - Trapper's Lake to the confluence with the South Fork.

2. South Fork - Source to the confluence with the North Fork.

3. Segment A - Confluence of the North and South Forks to Kenney Reservoir.

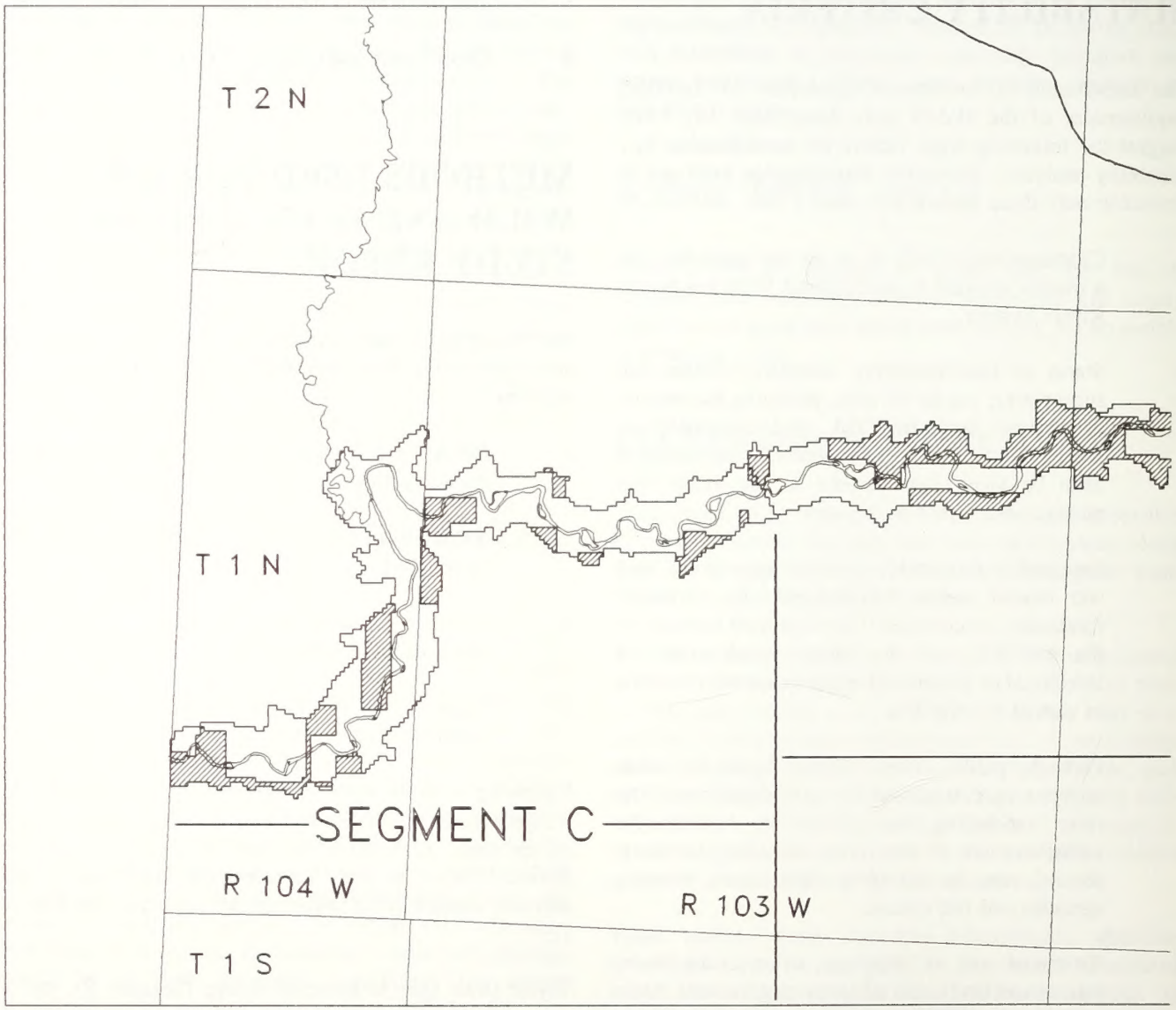
4. Segment B - Taylor Draw Dam to the Colorado/Utah border.

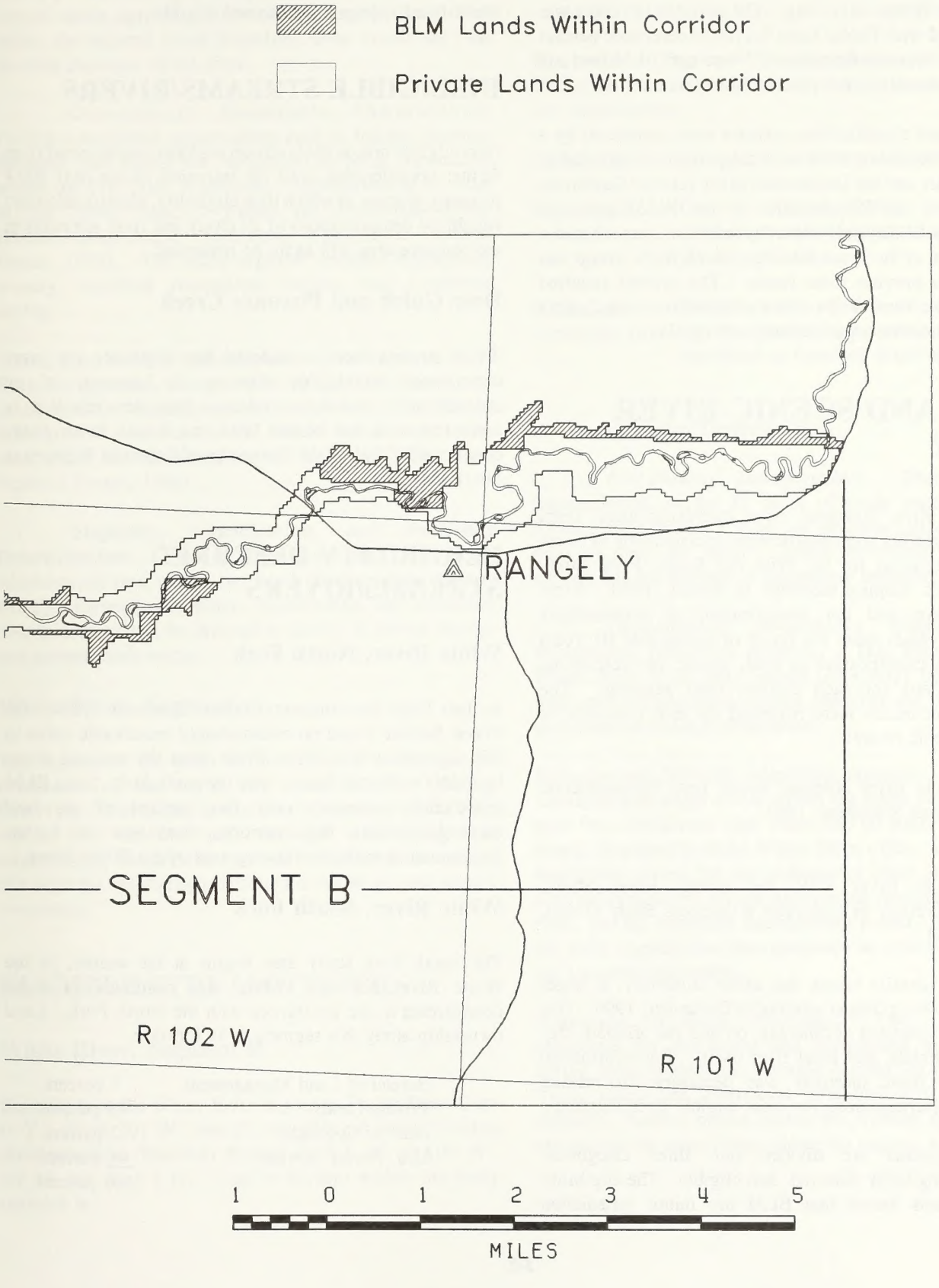
Following a WSR work group meeting on 4/28/93, in Rangely, Colorado, a decision was made to continue study on the lower 12 miles of Segment B, from the bridge at Shavetail Wash to the Colorado/Utah state line. This decision resulted in the following two segments (see Map J-1):

Taylor Draw Dam to Shavetail Bridge (Segment B), and

5. Segment C - Shavetail Bridge to the Colorado/Utah border.

MAP J–1. LAND OWNERSHIP WITHIN WHITE RIVER SEGMENTS B & C–WILD AND SCENIC RIVER STUDY




BLM Lands Within Corridor
Private Lands Within Corridor
RANGELY
SEGMENT B
R 102 W
R 101 W
1 0 1 2 3 4 5
MILES
N

MAP J-1

A one-half mile wide study corridor was delineated on 7.5-minute quadrangles for Segments B and C. This corridor was transferred to mylar overlay for Geographical Information System digitizing. The corridor coverage was then overlaid with Public Land Survey to determine percent ownership. Segment B contains 33.4 percent BLM land and Segment C contains 21.8 percent BLM land.

Eligibility and classification analyses were completed by a BLM interdisciplinary team according to criteria included in the *W&SR Act* and the Department of the Interior Guidelines for Fulfilling the Requirements of the *W&SR Act*. A competent suitability analysis is dependent on comprehensive identification of the issues involved, and a Work Group was organized to provide these issues. The process required extensive involvement of various affected river users, rights holders, protective organizations, and regulatory agencies.

WILD AND SCENIC RIVER STUDY

The White River Resource Area Interdisciplinary Team began an eligibility and classification determination of rivers and river segments for the Wild and Scenic River Study during public scoping meetings in March, 1990. Free-flowing status and the identification of outstandingly remarkable values were the result of continuous ID Team input, and a classification as wild, scenic, or recreational was determined for each eligible river segment. The following documents were reviewed for their treatment of wild and scenic rivers:

1. White River National Forest final Environmental Impact Statement, 1984.

2. White River Wild and Scenic River Study, University of Colorado Wilderness Study Group, 1991.

In order to identify issues that effect suitability, a larger RMP Work Group began meeting in December, 1990. This work group consisted of ranchers, oil and gas officials, city and state officials, and local river users. The information provided at these meetings was necessary for making suitability determinations for those eligible river segments.

Stream segments are divided into three categories: ineligible, eligibility deferred, and eligible. The eligibility deferred status means that BLM has minor jurisdiction within the study corridor and eligibility, classification, and suitability determinations will appropriately be made by the majority landowner(s). Map J-1 depicts river segments studied and segments determined eligible.

INELIGIBLE STREAMS/RIVERS

Non-eligible/non-suitable stream segments are dropped from further consideration until the initiation of the next RMP planning process, at which time eligibility, classification and suitability determinations of all rivers and river segments in the resource area will again be reviewed.

Deer Gulch and Piceance Creek

These streams were considered for eligibility but were determined non-eligible due to the absence of an outstandingly remarkable value. This determination is consistent with that of the Wild and Scenic River Study conducted in 1991 by the University of Colorado Wilderness Study Group.

ELIGIBILITY DEFERRED STREAMS/RIVERS

White River, North Fork

In their Final Environmental Impact Statement (1984), the Forest Service found no outstandingly remarkable value in this segment of the White River from the national forest boundary to the confluence with the south fork. Since BLM jurisdiction represents only five percent of the land ownership within this corridor, there was no further determination made for this segment of the White River.

White River, South Fork

The South Fork study area begins at the source, in the White River National Forest, and continues 44 miles downstream to the confluence with the North Fork. Land ownership along this segment is as follows:

Bureau of Land Management	1 percent
Private Lands	48 percent
State of Colorado	2 percent
U.S. Forest Service	49 percent
	100 percent

Eligibility Determination

Free-Flowing Determination. Although there are several minor agricultural diversions along the South Fork below the national forest boundary, none impair the free-flowing character of the river.

Outstandingly Remarkable Characteristics. Primitive recreation opportunities such as fishing, hunting, camping, and hiking are recognized as being outstanding within the Flat Tops Wilderness. Approximately 25 miles of the South Fork is within the Wilderness (Final Environmental Impact Statement, White River National Forest, 1984). The entire segment contains high-quality scenery, excellent recreational fishing, and a pastoral setting.

Spring Cave, located approximately .75 miles above South Fork Campground, is reported to be the third largest cave in Colorado. Underground lakes and one of the largest underground waterways in the United States occur in the cave (Final Environmental Impact Statement, White River National Forest, 1984).

Eligibility, Classification, and Suitability Determinations. Since the percentage of BLM-administered land within the South Fork corridor is very small (1 percent), eligibility, classification, and suitability determinations will be deferred to the U. S. Forest Service and private landowners.

White River, Segment A

This segment of the White River extends 75 miles from the confluence of the north and south forks to Kenney Reservoir. The BLM administers 16 percent of the land within this corridor and, although determining that outstandingly remarkable fish and wildlife values exist in this segment, eligibility is deferred to the 84 percent private ownership.

ELIGIBLE STREAMS/RIVERS

White River, Segment B

Segment B of the White River begins at Taylor Draw Dam in T.2 N., R.101 W., sec.27, 6th PM and flows 21 miles downstream to Shavetail Bridge in T.1 N., R.103 W., sec.10 (see Map J-1). Land ownership within the study corridor is:

Bureau of Land Management	33.4 percent
Private Lands	66.0 percent
City of Rangely	1.0 percent
	100.0 percent

That portion of Segment B from Douglas Creek to Shavetail Bridge has been assigned the following Colorado beneficial use classifications:

Aquatic Life: Class 1 - Warm Water Aquatic Life

Recreation: Class 1 - Primary Contact (Note: Fecal coliform counts in Segment B are less than 200 per 100 ml)

Agriculture: Surface water suitable or intended to become suitable for irrigation and are not hazardous as livestock drinking water.

Eligibility Determination.

Free-Flowing Determination. There are no impoundments in the 21 miles of study segment below Taylor Draw Dam but there are numerous diversions and most of these are minor. These diversions are almost entirely for the purpose of supporting irrigation pumps.

Outstandingly Remarkable Characteristics. Recreational (eligibility criterion): This segment of the White River is an early season (June/July) floating river with growing popularity among canoeists and boaters who seek minimal Class II whitewater.

Fisheries and Wildlife (eligibility criteria): There are identified bald eagle roosts within the study corridor (1/4-mile from the normal high water line on either side of the river). Segment B of the White River offers occupied and unimpeded access for the endangered adult and subadult Colorado squawfish, all life stages of the candidate roundtail chub, and the candidate flannelmouth sucker. In addition, the study segment has been proposed as critical habitat for the Colorado squawfish.

Vegetation (eligibility criterion): Two Category 1 candidates for threatened and endangered plant species listing occur within the 1/4-mile corridor of Segment B. These plants are *Penstemon grahamii* and *Penstemon lbifluvis*. Neither occurs within the riverine system; they are located on upland areas along the canyon walls.

Conclusion of Eligibility Determination. Because Segment B of the White River is free of impoundment, with minor diversions, and has outstandingly remarkable river-related values, it is eligible for further determination as a wild and scenic river.

Classification Analysis. Roads occur along both sides of the study segment for almost its complete length. Approximately half of the corridor contains hay meadows. Two bridges cross the river: state highway 64, approximately 3/4-mile northwest of Rangely and another at Shavetail Wash. The city limits of Rangely extend to the southern bank of the White River at a point five miles below Taylor Draw Dam, and the Rangely Airport is located one-half mile south of the river and two miles east of town. Numerous pipelines (both gas and oil) cross and/or follow the river between Rangely and the state line; most are gas lines and are above-ground.

Conclusion of Classification Analysis. Segment B of the White River is tentatively classified as recreational.

Suitability Determination

Analysis Factors

1. Characteristics that do or do not make the area a worthy addition to the National Wild and Scenic Rivers System.

The outstandingly remarkable values that qualify this segment of the White River for inclusion are the critical habitat designated for federally listed Colorado River squawfish and candidate flannelmouth sucker and roundtail chub, and bald eagle winter roost sites in remnant riverine cottonwood stands.

The study corridor, beginning at the Rangely Airport and continuing downstream to the bridge at Shavetail Wash, contains frequent and unsightly human development, which tends to make it unworthy of wild and scenic river designation.

2. Current status of land ownership, use in the area, including the amount of private land, current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

Private and industrial ownership affects a significant portion of the study segment, with oil and gas development predominating the area around Rangely. Although some development, such as the gravel pits below Rangely, is no longer active, their adverse effect upon the study segment will continue into the foreseeable future. Housing development from Rangely to the end of Segment B is not buffered from the stream and does not appear to be compatible with a wild and scenic designation.

3. The reasonably foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the National Wild and Scenic Rivers System, and the Values which could be foreclosed or diminished if the area is not protected as part of the *W&SR Act*.

Most discretionary action on public lands would be restricted, subject to valid existing rights under the *W&SR Act*. Existing oil and gas leases could be developed and future development would be permitted provided it is consistent with the recreational classification.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local, or other agencies and individuals.

There has been limited interest expressed, by a local official, for designation of Segment B as a wild and scenic river. The increased use for boating has resulted in frequent requests for information regarding river access and land ownership. These requests could be met without designation.

Discussion at the Rangely work group meeting provided considerable interest in nondesignation of the river. Landowners and county representatives are concerned about the ability of junior reserved water rights associated with designation to effectively block upstream development of existing senior water rights.

If Segment B were designated as a wild and scenic river, it is not likely that local groups, or city and county government, could or would contribute significantly to the level of administration and administrative costs necessary to maintain the river.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and or administering the area if it is added to the NWSRS.

Segment B could not be managed effectively as a wild and scenic river without acquiring private lands. However, protection of the outstandingly remarkable values would not vary with changes in land ownership. Threatened and endangered fish species would be provided the same degree of protection regardless of land ownership. Mature cottonwoods in the study corridor would probably be easier to protect on public lands but Taylor Draw Dam is probably a greater threat to their continued existence than private ownership.

The acquisition of land below Taylor Draw Dam, in the vicinity of Rangely Airport, and around the town of Rangely could be difficult and costly. Agricultural land without mineral rights would be conservatively valued at approximately $1,000 per acre. Smaller land parcels (i.e., ten acres) could be valued at $2,000 to $3,000 or more. The inclusion of mineral rights would drive costs up considerably. Land with recoverable gravel is difficult to assess, but it is potentially very high in value.

6. Ability of the agency to make and/or protect the river area or segment as a wild and scenic river.

The level of BLM ownership in Segment B would make it difficult to effectively manage and protect the river area. Enough public access points are located along the segment's boundary to provide adequate entry to the river, but management of the entire corridor with only 33.4 percent of the acres on public land would be difficult.

Cooperative agreements with private landowners would be necessary to manage and/or protect the river area as a wild and scenic river. The level of private landowner commitment necessary to enact an effective cooperative agreement was not demonstrated during the study.

7. Historical or existing rights which would be adversely affected by designation.

No existing rights have been identified in the study segment that would be immediately effected as a result of designation. Existing private property rights would be completely unaffected. Land purchases, exchanges or easement acquisitions would be carried out only with willing sellers. Unpatented mining claims would predate W&SR designation and thus would remain valid as long as proper diligence and filing are kept up. No new mining claims would be allowed within the corridor.

Congressional designation as a Wild and Scenic River will specify reserved water rights for the study segment or, in some cases, Congress can designate a wild and scenic river without specifying water rights. If no water rights are specified, courts will commonly refer back to the *W&SR Act* to state that designation automatically implies a reserved water right. Although BLM and other concerned parties may make recommendations concerning water rights following an affirmative suitability determination, Congress retains the right to specify exactly how water rights are to be handled.

The quantity of a reserved right, as specified by Congress, would be the **minimum** amount necessary to protect the outstandingly remarkable value(s) within the designated river segment. Congressional intent is to minimize the impact that the *W&SR Act* has on state water laws and state water rights, while still protecting the river. The minimum level of instream flow through Segment B necessary to sustain a viable population of Colorado Squawfish has not yet been determined but, if the river is designated as critical habitat for the squawfish, this level of flow will need to be identified.

Reserved water rights, either specified or implied as a result of wild and scenic river designation, would be junior to existing rights on the river. However, in the event of future development upstream of the segment, the potential exists for a junior reserved water right to block applications for changes by senior water rights holders. These applications might include changes in type and place of use, changes in point of diversion, or water augmentation (substitution) plans. A junior right may block applications for changes of senior water rights because the junior right is entitled by law to river conditions as they were at the time the junior right was awarded.

The protection of Colorado squawfish and their critical habitat has the same potential for affecting upstream development as reserved water rights.

8. Other issues and concerns identified in the land use planning process.

None

Conclusion of Suitability Determination. Segment B of the White River is not suitable for designation as a wild and scenic river. Reasons for this determination are:

1. Despite the existence of, and potentially critical habitat for, the Colorado squawfish, there are too

many negative values within the study corridor to make this segment worthy of designation. The presence of oil wells, bridges, pipelines and dwellings along both shores of Segment B would not necessarily diminish suitability as a recreational river. The lack of vegetative buffers and the occurrence of junked automobiles, derelict houses, and abandoned gravel pits does, however, detract from wild and scenic suitability.

2. Private ownership of 66 percent and development could allow significant changes to occur in private land use. These changes could affect the river's classification and overall character and environment.

3. Private landowners have not expressed interest in developing agreements to initiate zoning controls or other stipulations necessary to restrict development of the river corridor.

4. There has been no initiative and commitment from private landowners to share in the administration and management costs for a wild and scenic river.

Summary of Analysis. Segment B of the White River is free-flowing and has outstandingly remarkable fisheries and eagle winter roost values; it is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is recreational. Based upon the facts presented in the Suitability Analysis and Conclusion, Segment B is not suitable for designation as a wild and scenic river. The study segment and its values will, however, be afforded protection under the *Endangered Species Act* and by the fact that its public land area will be managed as an ACEC.

White River, Segment C

Segment C of the White River begins at the bridge near the confluence with Shavetail Wash in T.1 N., R.103 W., sec.10, 6th PM and flows 12 miles downstream to the Colorado/Utah border in T.1 N., R.104 W., sec.27, 6th PM. Land ownership within the study corridor is:

Bureau of Land Management	21.8 percent
Private Lands	78.2 percent
	100.0 percent

Segment C has been assigned the following Colorado beneficial-use classifications:

Aquatic Life: Class 1 - Warm Water Aquatic Life

Recreation: Class 1 - Primary Contact (Note: Fecal coliform counts in Segment C are less than 200 per 100 ml)

Agriculture: Surface water suitable or intended to become suitable for irrigation and are not hazardous as livestock drinking water.

Eligibility Determination

Free-Flowing Determination. There are minor diversions within the study segment but they are less frequent as the river exits agricultural lands and flows through the canyons near the Utah border.

Outstandingly Remarkable Characteristics. Recreational (eligibility criterion): Regional popularity for early season floating increases in Segment C as the river leaves the developed area of Rangely and enters the scenic canyon corridor.

Fisheries and Wildlife (eligibility criterion): Segment C supports the same outstandingly remarkable fish and wildlife values as Segment B.

Scenic (eligibility criterion): The study segment offers appealing views for boaters who appreciate solitary experiences and the unique cottonwood galleries, shale bluffs, and desert canyon scenery.

Vegetation (eligibility criterion): The two candidate plant species located along the bluffs in Raven Ridge area of Segment B are also located in Segment C.

Conclusion of Eligibility Determination. Because Segment C of the White River is free of impoundment, has only minor agricultural diversions, and has outstandingly remarkable values, it is eligible for further determination as a wild and scenic river.

Classification Analysis. Improved roads are found within the study corridor for about one mile on the north side of the river and five miles on the south side of the river below the bridge at Shavetail Wash. The south road, however, exits the river for about one and one-half miles in the Banty Point area. Dwellings are located along both shores with the Wardell Ranch, southwest of Banty Point, being the last. Agricultural fields and pastures are also located along both shores of the river for the full length of the study area, limited only by the adjacent cliffs. Below

the Wardell Ranch, travel within the corridor is by four-wheel drive only.

Conclusion of Classification Analysis. Segment C of the White River is tentatively classified as recreational from Shavetail Bridge to the Wardell Ranch and scenic from Wardell Ranch to the state line.

Suitability Determination

1. Characteristics that do or do not make the area a worthy addition to the National Wild and Scenic Rivers System.

The outstandingly remarkable recreation opportunity, fisheries and scenic values would make Segment C a worthy addition to the Wild and Scenic Rivers System.

Development along both shores within two miles of the Shavetail Wash bridge is not buffered from the stream. A gas pipeline parallels the south side of the river near Shavetail Wash and crosses under the river approximately 3/4-mile above the Wardell Ranch.

2. Current status of land ownership, use in the area, including the amount of private land, current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

Private land affects a significant portion of the study segment. Most of the area within the floodplain is agricultural. A large area of the private land is oil shale leases that may never be developed due to low-quality shale.

The large (78.2) percentage of private land ownership within the study corridor would not be compatible with a wild and scenic river designation without significant advocacy and commitment from a majority of those landowners. None of the present land uses would be incompatible with a wild and scenic river designation.

3. The reasonably foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the National Wild and Scenic Rivers System, and the Values which could be foreclosed or diminished if the area is not protected as part of the NWSRS.

Most discretionary action on public lands would be restricted, subject to valid existing rights under the *W&SR Act*. Existing oil and gas leases could be developed and future development would be permitted provided it is consistent with the recreational classification.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local, or other agencies and individuals.

Segment C is similar to B in many respects, although there may be added interest, among local officials and users of the river, for designation as a wild and scenic river. These individuals, however, apparently do not represent a majority of special interests or landowners within the study corridor. There was nothing introduced, during the study process, to suggest that local agencies, groups, or individuals would share in the administration of a wild and scenic river.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and or administering the area if it is added to the NWSRS.

Segment C is identical to Segment B in this respect; refer to the discussion in Segment B.

6. Ability of the agency to make and/or protect the river area or segment as a wild and scenic river.

Segment C is similar to Segment B in this respect, except that C has a smaller percent of BLM land (21.8 percent), which would make management and protection of the river area more difficult.

7. Historical or existing rights which would be adversely affected by designation.

The discussion provided in Segment B would apply equally to historical or existing rights in Segment C; refer to Segment B.

8. Other issues and concerns identified in the land use planning process.

None.

Conclusion of Suitability Determination. Segment C of the White River is not suitable for designation as a wild and scenic river. Reasons for this determination are:

1. With the exception of one local official, there was no expression of interest in the designation of

Segment C as a wild and scenic river by local agencies, groups, or individuals. There has been no initiative and commitment from agencies, groups, individuals or private landowners to share in the administration and management costs for a wild and scenic river.

2. There has been no landowner interest in developing an agreement which would effectively limit development within the study corridor.

3. Private ownership of 78.2 percent could result in future changes, independent of federal influence, in the river environment which would adversely effect a wild and scenic river designation.

4. Acquisition of additional public land within the study segment could be very costly.

Summary of Analysis. Segment C of the White River is free-flowing and has outstandingly remarkable fisheries, recreation, and eagle winter roost values. It is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is recreational. Based upon the facts presented in the Suitability Analysis and Conclusion, Segment C is not suitable for designation as a wild and scenic river. The study segment and its values will, however, be afforded protection under the *Endangered Species Act* and by the fact that its public land area will be managed as an ACEC.

Big Beaver Creek

The Big Beaver Creek study area begins at the source in T.2 N., R.91 W., sec.26 (unsurveyed), 6th PM, in the White River National Forest, and continues downstream to T.1 S., R.91 W., Sec.7, 6th PM where it enters Lake Avery. The majority of land ownership within the 18-mile corridor is U.S. Forest Service and private; Bureau of Land Management jurisdiction is only eight percent.

Instream flow appropriated to the state are:

From the junction of Little Beaver Creek Road to Lake Avery = 2.0 cubic feet/second

Eligibility Determination

Free-Flowing Determination. Big Beaver Creek is a perennial stream with one-half mile of BLM land located within the study corridor. There are no diversions or impoundments (except for beaver dams).

Outstandingly Remarkable Characteristics. Federal Candidate Species (eligibility criterion): Big Beaver Creek supports an established population of Colorado River cutthroat trout.

Riparian habitat (eligibility criterion): The riparian habitat along the entire length of Big Beaver Creek is excellent. It could not be improved upon and does not appear to be impacted anywhere.

Conclusion of Eligibility Determination. Big Beaver Creek is free-flowing and has at least one outstandingly remarkable value; it is eligible for determination as a wild and scenic river.

Classification Analysis. There are a couple of old cabins, surrounded by meadows, along the lower stretch of Big Beaver Creek. A four-wheel-drive road parallels the east side of the creek, crossing to the west side approximately one mile below a juncture with the Little Beaver road. This road crosses, at a low-water crossing, back to the east side about two miles above Little Beaver Road. Big Beaver Creek is roadless for the last three and one-half miles prior to reaching its source. There are no bridges across Big Beaver Creek. The riparian habitat along this creek is exceptional. It has not been impacted by livestock and is in no immediate danger of deteriorating.

Conclusion of Classification Analysis. Big Beaver Creek meets the established criteria for a tentative classification as scenic.

Suitability Determination

1. Characteristics that do or do not make the area a worthy addition to the National Wild and Scenic Rivers System.

The outstandingly remarkable values that qualify this stream as being eligible for inclusion are the fisheries and riparian habitat, and they would make the area a worthy addition to the wild and scenic rivers system.

2. Current status of land ownership, use in the area, including the amount of private land, current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

The current status of land ownership in the study corridor is as follows:

Bureau of Land Management	6 percent
U. S. Forest Service	62 percent
Colorado Division of Wildlife	3 percent
Private	29 percent
	100 percent

3. The reasonably foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the National Wild and Scenic Rivers System, and the Values which could be foreclosed or diminished if the area is not protected as part of the NWSRA.

Designation as a wild and scenic river would not enhance, foreclose or curtail reasonably foreseeable potential uses of the land. Most discretionary actions on public lands would be restricted, subject to valid existing rights, under designation as a wild and scenic river. Existing oil and gas leases could be developed.

The outstandingly remarkable fisheries and riparian habitat would not be expected to change under designation or non-designation. The *Endangered Species Act* would protect the Colorado River cutthroat trout population and habitat.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local, or other agencies and individuals.

There has been no interest expressed by public landowners regarding designation throughout the scoping and workshop meetings held for the RMP/EIS. It is not anticipated that private landowners would be interested in entering into an agreement with the BLM/USFS to share in the administration and costs of managing Big Beaver Creek as a wild and scenic river.

The Forest Service did not include Big Beaver Creek in its wild and scenic rivers study for the final Environmental Impact Statement, 1984, and have expressed no interest in designating it as a wild and scenic river.

The Colorado Division of Wildlife owns the last 1/4-mile of the study corridor prior to its entry into Lake Avery and they have expressed no interest in sharing the administrative costs associated with the management of a wild and scenic river.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and or administering the area if it is added to the NWSRS.

Acquisition of land in this area could be difficult and costly. Due to the fact that the Forest Service has jurisdiction over a majority of the study segment, it would be expected that they assume a leading role in administering the area if added to the NWSRS.

There has been no public interest in designating Big Beaver Creek as a wild and scenic river. Public sharing in the administration and costs of managing a wild and scenic river would not be anticipated.

6. Ability of the agency to make and/or protect the river area or segment as a wild and scenic river.

It would be very difficult for the BLM to manage and/or protect Big Beaver Creek as a wild and scenic river. In addition to requiring a significant commitment from the Forest Service, the lack of control of private land use within the study corridor would make future management tentative.

7. Historical or existing rights which would be adversely affected by designation.

No existing rights have been identified in the study segment that would be immediately effected as a result of designation. Existing private property rights would be completely unaffected. Land purchases, exchanges, or easement acquisitions would be carried out only with willing sellers. Unpatented mining claims would predate W&SR designation and thus would remain valid as long as proper diligence and filing are kept up. No new mining claims would be allowed within the corridor.

Congressional designation as a wild and scenic river will specify reserved water rights for the study segment or, in some cases, Congress can designate a wild and scenic river without specifying water rights. If no water rights are specified, courts will commonly refer back to the *W&SR Act* to state that designation automatically implies a reserved water right. Although BLM and other concerned parties may make recommendations concerning water rights following an affirmative suitability determination, Congress retains the right to specify exactly how water rights are to be handled.

The quantity of a reserved right, as specified by Congress, would be the **minimum** amount necessary to protect the outstandingly remarkable value(s) within the designated river segment. Congressional intent is to minimize the impact that the *W&SR Act* has on state water laws and state water rights, while still protecting the river. The minimum level of instream flow through Big Beaver Creek necessary to sustain a viable population of Colorado River cutthroat trout has not yet been determined but, if the river is determined suitable for wild and scenic river designation, this level of flow will need to be determined.

Reserved water rights, either specified or implied as a result of wild and scenic river designation, would be junior to existing rights on the river. However, in the event of future development upstream of the segment, the potential exists for a junior reserved water right to block applications for changes by senior water rights holders. These applications might include changes in type and place of use, changes in point of diversion, or water augmentation (substitution) plans. A junior right may block applications for changes of senior water rights because the junior right is entitled by law to river conditions as they were at the time the junior right was awarded.

Protection of the Colorado River cutthroat trout, under the *Endangered Species Act*, has the same potential for affecting upstream development as reserved water rights.

8. Other issues and concerns identified in the land use planning process.

None

Conclusion of Suitability Determination. Big Beaver Creek is not suitable for designation as a wild and scenic river. Reasons for this determination are:

1. During the public meetings there has been no interest expressed in designating this stream as a wild and scenic river. Big Beaver Creek was not included in the wild and scenic river study conducted by the U. S. Forest Service, White River National Forest, in the final environmental impact statement, 1984. The Colorado Division of Wildlife has not indicated interest in recommending the stream for wild and scenic river status.

2. Recommending the stream for wild and scenic river status with only 6 percent BLM jurisdiction would result in little control over changes in land use conducted by the majority landowners. Such changes could affect stream classification and the overall environment with no influence by BLM.

3. Agreements would be necessary in order to protect the river corridor and manage it effectively. Sharing of administrative costs would be essential. There has been no move to consider a wild and scenic designation let alone the cost-sharing necessary to manage the river.

4. Protection of the Colorado River cutthroat trout and its habitat under the *Endangered Species Act* would be effective without designation of Big Beaver Creek as a wild and scenic river.

Summary of Analysis. Big Beaver Creek is free-flowing and has outstandingly remarkable fisheries and riparian habitat. It is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is scenic. Based upon the facts presented in the Suitability Analysis and Conclusion, Big Beaver Creek is not suitable for designation as a wild and scenic river. The Colorado River cutthroat trout will, however, be afforded protection under the *Endangered Species Act*.

East Douglas Creek

The East Douglas Creek study segment begins at the source in T.5 S., R.100 W., sec.24, 6th PM and continues downstream to the confluence with Tommy's Draw in T.3 S., R.100 W., sec.7, 6th PM. Land ownership of the 20-mile segment is as follows:

Bureau of Land Management	61 percent
Private Lands	39 percent
	100 percent

Instream flows appropriated to the State of Colorado are:

From the headwaters to the confluence with Brush Creek = 1.0 cubic feet/second

From the confluence with Brush Creek to the confluence with Cathedral Creek = 1.5 cubic feet/second

The mainstream of East Douglas Creek, including all tributaries to the confluence with Cathedral Creek, has the following Colorado beneficial use classifications:

Recreation: Class 2 - Secondary Contact

Agriculture: Suitable for irrigation of crops and not hazardous for livestock drinking water.

Aquatic Life: Class 1 - Cold Water Aquatic Life

Domestic Water Supply: Suitable or intended to become suitable for potable water supplies.

Colorado Antidegradation Policy Designation = High Quality 2: Existing high quality waters must be maintained at their existing high quality unless the state decides to allow limited degradation where economically or socially justified. If limited degradation is allowed, it cannot result in violation of water quality criteria that protect existing uses.

Oil and gas development in the greater East Douglas Creek tributaries: East Douglas Creek and the following four major tributaries have significant potential for oil and gas development. In order to describe the existing and potential disturbances within the study segments of these streams, an inventory of wells in the 1/4-mile corridors was conducted. Approximately 17,000 acres are affected and the corridors intersect 67 different sections:

1. Cathedral Creek
2. Lake Creek
3. Soldier Creek
4. Bear Park Creek

A greater amount of drilling activity has been concentrated along the waterway on East Douglas Creek because it is the easiest location to access within the extremely diverse topography of the area. Well sites were selected in most cases because they would cause less site disturbance and were more accessible and easier to build on than steep canyon walls and remote hill tops.

There are 34 gas wells within the study corridors of these five streams. Eight of these wells are inactive (shut-in) and the surface locations have been partially reclaimed. They are being retained because of their future production potential. The remaining 26 wells are active gas producers. The entire region is underlain by gas and condensate-bearing strata. It is anticipated that limited development will continue to be proposed by industry in the future. Extensive development has occurred in land immediately adjacent to the study corridor. Within the 67 sections immediately contacted by the corridors (but outside their boundaries), there are an additional 37 gas wells (10 shut-in and 27 active). There are numerous other wells in the general area but outside the contacted sections.

Gas development was more extensive along East Douglas Creek than its tributaries because a capital investment was made to lay a pipeline in this drainage. The other waterways have as much potential to develop gas reserves as East Douglas Creek, but they do not have pipeline access as far up each drainage. A decrease in gas prices at the time of development prevented as much drilling along the other waterways. It can be anticipated that future gas price increases would make development of acreage within the other drainages a priority for industry.

Eligibility Determination

Free-Flowing Determination. The most significant diversion along the study segment of East Douglas Creek is found 1/2-mile upstream from the confluence with Cathedral Creek and is used for irrigation. Approximately 60% of the stream length contains occasional beaver dams.

Outstandingly Remarkable Characteristics. Fisheries resource (eligibility criterion): Federal candidate Colorado River cutthroat trout are confined primarily to the upper portion of the creek above Gillian Draw, but trout have been seen downstream to the confluence with Cathedral Creek. Trout are found on approximately one mile of BLM land.

Riparian habitat (eligibility criterion): The riparian habitat on East Douglas Creek is generally excellent along the entire length of the study segment.

Conclusion of Eligibility Determination. Because 20 miles of East Douglas Creek are free-flowing as defined in the *W&SR Act* and because values exist within the study segment that must be considered "outstandingly remarkable" as defined by the Act, East Douglas Creek is eligible for wild and scenic designation.

Classification Analysis. There are fields near the bottom of the study segment at Tommy's Draw. Unimproved roads are located within the entire corridor and in many areas are found on both sides of East Douglas Creek. A number of low water crossings are found along the stream and occasional culvert crossings. There are 29 gas wells located within the study segment of East Douglas creek, and most development is north of T.4 S., R.101 W., sec.23. Twenty three wells are active gas producers and six are shut-in.

Conclusion of Classification Analysis. The 20-mile study segment of East Douglas Creek, from the source to

Tommy's Draw, meets the requirements for tentative classification as recreational.

Suitability Determination

1. Characteristics that do or do not make the area a worthy addition to the national wild and scenic rivers system.

The outstandingly remarkable values that qualify this stream as being eligible for inclusion are the candidate threatened fisheries and fish habitat for the Colorado River cutthroat trout and the excellent riparian habitat.
Management of the values under the provisions of the Wild and Scenic River System would not provide for watershed protection outside of the designated 1/4-mile corridor.

2. Current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

Percentages of Federal land on the study stream managed by BLM are listed in Table H-1. Non-Federal ownership affects a significant portion of the drainage. Oil and gas leasing and development has affected the drainage with a moderate amount of past development. The study area is considered as having a high potential for oil and gas resource development.

3. The reasonably foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRs.

Most discretionary actions on public lands would be restricted, subject to valid existing rights, under either designation as an ACEC or under the *W&SR Act*. Existing oil and gas leases could be developed under wild and scenic river designation.

It is not anticipated that any outstandingly remarkable values would be diminished or foreclosed if the segment is not designated since values would be protected under the *Endangered Species Act* and BLM policy governing sensitive species. Special management attention would be required for the entire watershed under the preferred alternative.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local or other agencies and individuals.

There has been no interest expressed by the public or other entities regarding designation throughout the scoping and workshop meetings held for the RMP/EIS. Public input on recommendations for Wild and Scenic River designation or non-designation will be accomplished with release of the draft RMP/EIS.

The only managing agencies in the vicinity are the Colorado Division of Wildlife (CDOW) and the BLM. The CDOW would continue their support for management of the fisheries regardless of wild and scenic river designation. No other public group or agency has expressed an interest in assisting with management of the drainage being studied.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and of administering the area if it is added to the nwsrs.

The segment could be managed to provide for value protection without acquiring private lands. Private ownership within the study segment is less than 50%. The costs of acquiring this acreage to protect the free-flowing condition and fisheries would not be justified under the current level of development. Inholdings may become available from willing sellers and could be acquired. Wild and Scenic River designation would not ensure acquisition of critical lands within the watershed outside of the 1/4-mile corridor (320 acres/mile).

6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river.

Because of the current attention paid to wildlife management in this area, it would not be difficult for the BLM to incorporate considerations to maintain or protect values under current management guidelines. If designated, the management plan could enact cooperative agreements with private landowners regarding the management and protection of outstandingly significant values in the segment. This approach would be preferred in lieu of fee simple acquisition or the acquisition of easements. Some landowners would be willing participants while others would not.

7. Historical or existing rights which would be adversely affected by designation.

No existing rights have been identified in the study segment that would be immediately effected as a result of designation. Existing private property rights would be completely unaffected. Land purchases, exchanges or easement acquisitions would be carried out only with willing sellers. Unpatented mining claims would predate W&SR designation and thus would remain valid as long as proper diligence and filing are kept up. No new mining claims would be allowed within the corridor.

Congressional designation as a Wild and Scenic River either specifies reserved water rights or, if no specification is included, courts will refer back to the *W&SR Act* to state that designation automatically implies a reserved water right. Although BLM and other concerned parties may make recommendations concerning water rights following an affirmative suitability designation, Congress retains the right to specify exactly how water rights are to be handled.

The quantity of a reserved right, as specified by Congress, would be the **minimum** amount necessary to protect the outstandingly remarkable value(s) within the designated river segment. Congressional intent is to minimize the impact that the *W&SR Act* has on state water laws and state water rights, while still protecting the river. The minimum level of instream flow through East Douglas Creek has not yet been determined but, if the river is designated as wild and scenic, this level of flow will need to be identified.

Reserved water rights, either specified or implied as a result of wild and scenic river designation, would be junior to existing rights on the river. However, in the event of future development upstream of the segment, the potential exists for a junior reserved water right to block applications for changes by senior water rights holders. These applications might include changes in type and place of use, changes in point of diversion, or water augmentation (substitution) plans. A junior right may block applications for changes of senior water rights because the junior right is entitled by law to river conditions as they were at the time the junior right was awarded.

The protection of Colorado River cutthroat trout through the *Endangered Species Act* has the same potential for affecting upstream development as reserved water rights.

8. Other issues and concerns identified in the land-use planning process.

Designation under the *W&SR Act* would not address other impacts to the outstandingly remarkable fisheries if not within the segment corridor. Designation would also limit future habitat enhancement or study projects involving in-stream manipulation. Designation as an area of critical environmental concern (ACEC) would better address the needs of off-stream mitigation and in-stream enhancement of the fisheries resource. Any non-discretionary development in the drainages would be subject to the BLM policy on sensitive species and the *Endangered Species Act*, regardless of W&SR designation.

Conclusion of Suitability Determination. The outstandingly remarkable values (riparian habitat and Candidate T&E Fish) of East Douglas Creek would be more appropriately managed under an Area of Critical Environmental Concern (ACEC) designation rather than as components of the National Wild and Scenic River System. Reasons for this determination are:

1. Protection of the outstandingly remarkable values under the *Endangered Species Act* and BLM sensitive species policy would apply without designation as a Wild and Scenic River.

2. Designation of the area as an ACEC would allow for protective measures to be applied to all activities within the watersheds. Wild and Scenic River designation would only apply to a narrow 1/2-mile corridor along the study segments and would not add significant protection. Although it may not be appropriate in this case, it is possible to have a wild and scenic river designated within an ACEC.

3. Costs of management would be essentially the same with either an ACEC or W&SR designation since values to be protected are natural values.

4. Acquisition of private inholdings would be possible under designation as an ACEC or a Wild and Scenic River.

Summary of Analysis. East Douglas Creek is free-flowing and has outstandingly remarkable riparian and

fisheries values; it is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is recreational. Based upon the facts presented in the Conclusion of Suitability Determination, the study segment is being designated as non-suitable and is removed from further consideration under the provisions of the *W&SR Act*.

Cathedral Creek

The Cathedral Creek study segment begins at the source in T.4 S., R.100 W., sec.24, 6th PM and flows downstream to the confluence with East Douglas Creek in T.3 S., R.100 W., sec.17, 6th PM. Land ownership within the 14-mile corridor is as follows:

Bureau of Land Management	54 percent
Private Lands	46 percent
	100 percent

Instream flows appropriated to the state are:

From Soldier Creek to the confluence with East Douglas Creek = 1.5 cubic feet/second

Eligibility Determination

Free-Flowing Determination. There are several diversions along Cathedral Creek, for irrigation purposes, but only two are currently being used. Cathedral Creek is perennial and approximately 20% is impounded by beaver ponds; there are no man-made impoundments.

Outstandingly Remarkable Characteristics. Riparian habitat (eligibility criterion): The riparian habitat along Cathedral Creek is somewhat variable and generally improving along the study corridor.

Federal candidate species (eligibility criterion): Although there is no confirmed and established population of Colorado River cutthroat trout in Cathedral Creek, the existence of this species in adjoining streams, and the improving riparian habitat, makes it possible that a viable population could occur during the planning period.

Conclusion of Eligibility Determination. Because the 14-mile study segment of Cathedral Creek is free-flowing and because values exist within the stream corridor that must be considered "outstandingly remarkable" according to the *W&SR Act*, Cathedral Creek is eligible for determination as a wild and scenic river.

Classification Analysis. Streamflow is very minor near the source on top of Cathedral Bluffs; a road follows the creek for approximately three miles, along the west bank, in this area. Below the bluffs there is a road that parallels the north side of the creek with one abandoned wooden bridge, one low water crossing, and two culvert crossings. Irrigated fields are found adjacent to Cathedral Creek immediately above the confluence with East Douglas Creek. There are four wells located within the study corridor on lower Cathedral Creek between its confluence with Lake Creek and East Douglas Creek. Three are active gas producers and one is shut-in.

Conclusion of Classification Analysis. Cathedral Creek meets the established criteria for a tentative classification as scenic.

Suitability Determination

1. Characteristics that do or do not make the area a worthy addition to the national wild and scenic rivers system.

The outstandingly remarkable values that qualify Cathedral Creek as being eligible for inclusion are the candidate threatened fisheries and fish habitat for the Colorado River cutthroat trout and the excellent riparian habitat.

Management of the values under the provisions of the Wild and Scenic River System would not provide for watershed protection outside of the designated 1/4-mile corridor.

2. Current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

There is 54 percent BLM and 46 percent private land within the Cathedral Creek study segment. Non-federal ownership affects a significant portion of the drainage. Oil and gas leasing and development has affected the drainage with a moderate amount of past development. The study area is considered as having a high potential for oil and gas resource development.

3. The reasonable foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system, and the values which could be foreclosed or diminished if the area is not protected as part of the nwsrs.

Most discretionary actions on public lands in the Cathedral Creek corridor would be restricted, subject to valid existing rights, under either designation as an ACEC or under the *W&SR Act*. Existing oil and gas leases could be developed under wild and scenic river designation.

It is not anticipated that any outstandingly remarkable values would be diminished or foreclosed if the segment is not designated, since values would be protected under the *Endangered Species Act* and BLM policy governing sensitive species. Special management attention would be required for the entire watershed under the preferred alternative.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local or other agencies and individuals.

There has been no interest expressed by the public or other entities regarding designation throughout the scoping and workshop meetings held for the RMP/EIS. Public input on recommendations for wild and scenic river designation or non-designation will be accomplished with release of the draft RMP/EIS.

The only managing agencies in the vicinity are the Colorado Division of Wildlife (CDOW) and the BLM. The CDOW would continue their support for management of the fisheries in Cathedral Creek regardless of wild and scenic river designation. No other public group or agency has expressed an interest in assisting with management of the drainage being studied.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and of administering the area if it is added to the NWSRs.

Cathedral Creek could be managed to provide for value protection without acquiring private lands. Private ownership within the study segment is less than 50%. The costs of acquiring this acreage to protect the free-flowing condition and fisheries would not be justified under the current level of development. Inholdings may become available from willing sellers and could be acquired. Wild and scenic river designation would not ensure acquisition of critical lands within the watershed outside of the 1/4-mile corridor (320 acres/mile).

6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river.

Because of the current attention paid to wildlife management in this area, it would not be difficult for the BLM to incorporate considerations to maintain or protect values under current management guidelines. If designated, the management plan could enact cooperative agreements with private landowners regarding the management and protection of outstandingly significant values along Cathedral Creek. This approach would be preferred in lieu of fee simple acquisition or the acquisition of easements. Some landowners would be willing participants while others would not.

7. Historical or existing rights which would be adversely affected by designation.

No existing rights have been identified along Cathedral Creek that would be immediately effected as a result of designation. Existing private property rights would be completely unaffected. Land purchases, exchanges, or easement acquisitions would be carried out only with willing sellers. Unpatented mining claims would predate W&SR designation and thus would remain valid as long as proper diligence and filing are kept up. No new mining claims would be allowed within the study corridor.

Congressional designation as a wild and scenic river will specify reserved water rights for the study segment or, in some cases, Congress can designate a wild and scenic river without specifying water rights. If no water rights are specified, courts will commonly refer back to the *W&SR Act* to state that designation automatically implies a reserved water right. Although BLM and other concerned parties may make recommendations concerning water rights following an affirmative suitability determination, Congress retains the right to specify exactly how water rights are to be handled.

The quantity of a reserved right, as specified by Congress, would be the **minimum** amount necessary to protect the outstandingly remarkable value(s) within the designated river segment. Congressional intent is to minimize the impact that the *W&SR Act* has on state water laws and state water rights, while still protecting the river. The minimum level of instream flow through Cathedral Creek necessary to sustain a viable population of Colorado River cutthroat trout has not yet been determined but, if the river is designated as wild and scenic, this level of flow will need to be identified.

Reserved water rights, either specified or implied as a result of wild and scenic river designation, would be junior to existing rights on the river. However, in the event of future development upstream of the segment, the potential exists for a junior reserved water right to block applications for changes by senior water rights holders. These applications might include changes in type and place of use, changes in point of diversion, or water augmentation (substitution) plans. A junior right may block applications for changes of senior water rights because the junior right is entitled by law to river conditions as they were at the time the junior right was awarded.

The protection of Colorado River cutthroat trout under the *Endangered Species Act* has the same potential for affecting upstream development as reserved water rights.

8. Other issues and concerns identified in the land-use planning process.

None

Conclusion of Suitability Determination. The outstandingly remarkable values of Cathedral Creek would be more appropriately managed under an ACEC designation rather than as a component of the National Wild and Scenic Rivers System. The reasons for this determination are:

1. Protection of the Colorado River cutthroat trout and its habitat in Cathedral Creek would be effective without designation as a wild and scenic river.

2. Designation of an ACEC would allow for protective measures to be applied to all activities within the watershed. Wild and scenic river designation would only apply to a narrow 1/2-mile corridor along the study segment and would not add significant protection.

3. Costs of management would be essentially the same with either an ACEC or W&SR designation since values to be protected are natural values.

4. Acquisition of private inholdings would be possible under designation as an ACEC or a wild and scenic river.

Summary of Analysis. Cathedral Creek is free-flowing and has outstandingly remarkable riparian and fisheries values; it is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is scenic. Based upon the facts presented in the Conclusion of Suitability Determination, Cathedral Creek is being designated as non-suitable and is removed from further consideration under the provisions of the *W&SR Act*.

Lake Creek

The Lake Creek study segment begins at the source (two forks) in T.4 S., R.100 W., sec.32, 6th PM and runs downstream to the confluence with Cathedral Creek in T.3 S., R.100 W., sec.25, 6th PM. The right and left forks of Lake Creek originate within 1/2-mile of each other. Land ownership of the 14-mile segment is as follows:

Bureau of Land Management	56 percent
Private Lands	40 percent
State of Colorado	4 percent
	100 percent

Instream flow appropriated to the State of Colorado is:

From the confluence of the right and left forks to the confluence with Cathedral Creek = 1.5 cubic feet/second

Eligibility Determination

Free-Flowing Determination. Lake Creek is a perennial stream with five miles of BLM land located within the study corridor. One irrigation diversion is located just upstream from the Bobcat private lands. There are no impoundments other than the approximately 10 percent occupation by beaver dams.

Outstandingly Remarkable Characteristics. Federal candidate species (eligibility criterion): There is a viable population of Federal candidate Colorado River cutthroat trout in Lake Creek.

BLM sensitive plant species (eligibility criterion): *Sullivantia purpusii* is located along waterfall faces in the upper reaches of Lake Creek.

Although not presented as eligibility criteria, there is an excellent view from the headwaters of Lake Creek and the riparian habitat is fair but improving.

Conclusion of Eligibility Determination. Because the entire 14-mile length of Lake Creek, including both forks, is free-flowing and contains outstandingly remarkable values, it is eligible for further consideration as a wild and scenic river.

Classification Analysis. For the entire eight-mile flow of both the right and left forks of Lake Creek the study corridor is roadless. A road parallels the stream on the west side from Cathedral Creek to approximately 1/8-mile below the confluence of the right and left forks, where there is a low-water crossing. Irrigated fields are located along the last 1/4-mile prior to the confluence with Cathedral Creek. One shut-in gas well exists within the study segment of Lake Creek.

Conclusion of Classification Analysis. Lake Creek meets the established criteria for tentative classification as a wild river.

Suitability Determination

1. Characteristics that do or do not make the area a worthy addition to the national wild and scenic rivers system.

The outstandingly remarkable values that qualify Lake Creek as being eligible for inclusion are the candidate threatened fisheries and fish habitat for the Colorado River cutthroat trout and the BLM sensitive plant species located along waterfall faces in the upper reaches of the creek.

Management of the values under the provisions of the Wild and Scenic River System would not provide for watershed protection outside of the designated 1/4-mile corridor.

2. Current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

There is 56 percent BLM, 40 percent private, and 4 percent state land within the Lake Creek study segment. Non-federal ownership affects a significant portion of the drainage. Oil and gas leasing and development has affected the drainage with a moderate amount of pst development. The study area is considered as having a high potential for oil and gas resource development.

3. The reasonably foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRs.

Most discretionary actions on public lands in the Lake Creek corridor would be restricted, subject to valid existing rights, under either designation as an ACEC or under the *W&SR Act*. Existing oil and gas leases could be developed under wild and scenic river designation.

It is not anticipated that any outstandingly remarkable values would be diminished or foreclosed if the segment is not designated, since values would be protected under the *Endangered Species Act* and BLM policy governing sensitive species. Special management attention would be required for the entire watershed under the preferred alternative.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local or other agencies and individuals.

There has been no interest expressed by the public or other entities regarding designation throughout the scoping and workshop meetings held for the RMP/EIS. Public input on recommendations for wild and scenic river designation or non-designation will be accomplished with release of the draft RMP/EIS.

The only managing agencies in the vicinity are the Colorado Division of Wildlife (CDOW) and the BLM. The CDOW would continue their support for management of the fisheries in Lake Creek regardless of wild and scenic river designation. No other public group or agency has expressed an interest in assisting with management of the drainage being studied.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and of administering the area if it is added to the NWSRs.

Lake Creek could be managed to provide for value protection without acquiring private lands. Private ownership within the study segment is less than 50%. The costs of acquiring this acreage to protect the free-flowing condition and fisheries would not be justified under the current level of development. Inholdings may become available from willing sellers and could be acquired. Wild and scenic river designation would not ensure acquisition of critical lands within the watershed outside of the 1/4-mile corridor (320 acres/mile).

6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river.

Because of the current attention paid to wildlife management in this area, it would not be difficult for the BLM to incorporate considerations to maintain or protect values under current management guidelines. If designated, the management plan could enact cooperative agreements with private landowners regarding the management and protection of outstandingly significant values along Lake Creek. This approach would be preferred in lieu of fee simple acquisition or the acquisition of easements. Some landowners would be willing participants while others would not.

7. Historical or existing rights which would be adversely affected by designation.

No existing rights have been identified along Lake Creek that would be immediately effected as a result of designation. Existing private property rights would be completely unaffected. Land purchases, exchanges, or easement acquisitions would be carried out only with willing sellers. Unpatented mining claims would predate W&SR designation and thus would remain valid as long as proper diligence and filing are kept up. No new mining claims would be allowed within the study corridor.

Congressional designation as a wild and scenic river will specify reserved water rights for the study segment or, in some cases, Congress can designate a wild and scenic river without specifying water rights. If no water rights are specified, courts will commonly refer back to the *W&SR Act* to state that designation automatically implies a reserved water right. Although BLM and other concerned parties may make recommendations concerning water rights following an affirmative suitability determination, Congress retains the right to specify exactly how water rights are to be handled.

The quantity of a reserved right, as specified by Congress, would be the minimum amount necessary to protect the outstandingly remarkable value(s) within the designated river segment. Congressional intent is to minimize the impact that the *W&SR Act* has on state water laws and state water rights, while still protecting the river. The minimum level of instream flow through Lake Creek necessary to sustain a viable population of Colorado River cutthroat trout has not yet been determined but, if the river is designated as wild and scenic, this level of flow will need to be identified.

Reserved water rights, either specified or implied as a result of wild and scenic river designation, would be junior to existing rights on the river. However, in the event of future development upstream of the segment, the potential exists for a junior reserved water right to block applications for changes by senior water rights holders. These applications might include changes in type and place of use, changes in point of diversion, or water augmentation (substitution) plans. A junior right may block applications for changes of senior water rights because the junior right is entitled by law to river conditions as they were at the time the junior right was awarded.

The protection of Colorado River cutthroat trout under the *Endangered Species Act* has the same potential for affecting upstream development as reserved water rights.

8. Other issues and concerns identified in the land-use planning process.

None

Conclusion of Suitability Determination. The outstandingly remarkable values of Lake Creek would be more appropriately managed under an ACEC designation rather than as a component of the National Wild and Scenic Rivers System. The reasons for this determination are:

1. Protection of the Colorado River cutthroat trout and its habitat in Lake Creek would be effective without designation as a wild and scenic river.

2. Designation of an ACEC would allow for protective measures to be applied to all activities within the watershed. Wild and scenic river designation would only apply to a narrow 1/2-mile corridor along the study segment and would not add significant protection.

3. Costs of management would be essentially the same with either an ACEC or W&SR designation since values to be protected are natural values.

4. Acquisition of private inholdings would be possible under designation as an ACEC or a wild and scenic river.

Summary of Analysis. Lake Creek is free-flowing and has outstandingly remarkable fisheries and sensitive plant species; it is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is wild. Based upon the facts presented in the

Conclusion of Suitability Determination, Lake Creek is designated as non-suitable and is removed from further consideration under the provisions of the *W&SR Act*.

Soldier Creek

The Soldier Creek study segment begins at the source in T.4 S., R.100 W., sec.26, 6th PM and continues downstream to the confluence with Cathedral Creek in T.3 S., R.100 W., sec.25, 6th PM. Land ownership within the 13-mile corridor is as follows:

Bureau of Land Management	41 percent
Private Lands	49 percent
State of Colorado	10 percent
	100 percent

Instream flow appropriated to the State of Colorado is:

> From the confluence of the right and middle forks to the confluence with Cathedral Creek = 1.5 cubic feet/second

A nonpoint source assessment report identifies Soldier Creek, from its source to the confluence with Cathedral Creek, has been identified as a drainage high in salinity contributions.

Eligibility Determination

Free-Flowing Determination. There are three forks of Soldier Creek prior to descending from Cathedral Bluffs, where they join for the last four miles prior to the confluence with Cathedral Creek. One diversion is found just above the Bobcat hay meadows on private land. There are no impoundments of Soldier Creek.

Outstandingly Remarkable Characteristics. Federal candidate species (eligibility criterion): Colorado River cutthroat trout are found within the lower four miles of Soldier Creek.

BLM sensitive plant species (eligibility Criterion): *Sullivantia purpusii* is located along waterfall faces on the upper reaches of Soldier Creek.

The riparian habitat along Soldier Creek is fair to poor, but is improving.

Conclusion of Eligibility Determination. Since each fork and the main channel of Soldier Creek are free-flowing and contain outstandingly remarkable values, the creek is eligible for further determination as a wild and scenic river.

Classification Analysis. A road parallels Soldier Creek for four miles, beginning on the east side for 1-1/2-miles from the Cathedral Creek crossing and then on the west side up to the confluence of the three forks. There is one fence crossing, one watergap, and a fence enclosure along a portion of the creek. Irrigated fields are found along the lower 1/4-mile of Soldier Creek near its confluence with Cathedral Creek. No oil or gas wells exist within the study corridor of Soldier Creek.

Conclusion of Classification Analysis. Soldier Creek satisfies the established criteria for a tentative classification as scenic.

Suitability Determination

1. Characteristics that do or do not make the area a worthy addition to the national wild and scenic rivers system.

The outstandingly remarkable values that qualify Soldier Creek as being eligible for inclusion are the candidate threatened fisheries and fish habitat for the Colorado River cutthroat trout and the BLM sensitive plant species located along waterfall faces in the upper reaches of the creek.

Management of the values under the provisions of the Wild and Scenic River System would not provide for watershed protection outside of the designated 1/4-mile corridor.

2. Current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

There is 41 percent BLM, 49 percent private, and 10 percent state land within the Soldier Creek study segment. Non-federal ownership affects a significant portion of the drainage. Oil and gas leasing and development has affected the drainage with a moderate amount of past development. The study area is considered as having a high potential for oil and gas resource development.

3. The reasonably foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRs.

Most discretionary actions on public lands in the Soldier Creek corridor would be restricted, subject to valid existing rights, under either designation as an ACEC or under the *W&SR Act*. Existing oil and gas leases could be developed under wild and scenic river designation.

It is not anticipated that any outstandingly remarkable values would be diminished or foreclosed if the segment is not designated, since values would be protected under the *Endangered Species Act* and BLM policy governing sensitive species. Special management attention would be required for the entire watershed under the preferred alternative.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local or other agencies and individuals.

There has been no interest expressed by the public or other entities regarding designation throughout the scoping and workshop meetings held for the RMP/EIS. Public input on recommendations for wild and scenic river designation or non-designation will be accomplished with release of the draft RMP/EIS.

The only managing agencies in the vicinity are the Colorado Division of Wildlife (CDOW) and the BLM. The CDOW would continue their support for management of the fisheries in Soldier Creek regardless of wild and scenic river designation. No other public group or agency has expressed an interest in assisting with management of the drainage being studied.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and of administering the area if it is added to the nwsrs.

Soldier Creek could be managed to provide for value protection without acquiring private lands. Private ownership within the study segment is slightly less than 50%. The costs of acquiring this acreage to protect the free-flowing condition and fisheries would not be justified under the current level of development. Inholdings may become available from willing sellers and could be acquired. Wild and scenic river designation would not ensure acquisition of critical lands within the watershed outside of the 1/4-mile corridor (320 acres/mile).

6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river.

Because of the current attention paid to wildlife management in this area, it would not be difficult for the BLM to incorporate considerations to maintain or protect values under current management guidelines. If designated, the management plan could enact cooperative agreements with private landowners regarding the management and protection of outstandingly significant values along Soldier Creek. This approach would be preferred in lieu of fee simple acquisition or the acquisition of easements. Some landowners would be willing participants while others would not.

7. Historical or existing rights which would be adversely affected by designation.

No existing rights have been identified along Soldier Creek that would be immediately effected as a result of designation. Existing private property rights would be completely unaffected. Land purchases, exchanges, or easement acquisitions would be carried out only with willing sellers. Unpatented mining claims would predate W&SR designation and thus would remain valid as long as proper diligence and filing are kept up. No new mining claims would be allowed within the study corridor.

Congressional designation as a wild and scenic river will specify reserved water rights for the study segment or, in some cases, Congress can designate a wild and scenic river without specifying water rights. If no water rights are specified, courts will commonly refer back to the *W&SR Act* to state that designation automatically implies a reserved water right. Although BLM and other concerned parties may make recommendations concerning water rights following an affirmative suitability determination, Congress retains the right to specify exactly how water rights are to be handled.

The quantity of a reserved right, as specified by Congress, would be the minimum amount necessary to protect the outstandingly remarkable value(s) within the designated river segment. Congressional intent is to minimize the impact that the *W&SR Act* has on state water laws and state water rights, while still protecting the river. The minimum level of instream flow through Soldier Creek necessary to sustain a viable population of Colorado River cutthroat trout has not yet been determined but, if the river is designated as wild and scenic, this level of flow will need to be identified.

Reserved water rights, either specified or implied as a result of wild and scenic river designation, would be junior to existing rights on the river. However, in the event of future development upstream of the segment, the potential exists for a junior reserved water right to block applications for changes by senior water rights holders. These applications might include changes in type and place of use, changes in point of diversion, or water augmentation (substitution) plans. A junior right may block applications for changes of senior water rights because the junior right is entitled by law to river conditions as they were at the time the junior right was awarded.

The protection of Colorado River cutthroat trout under the *Endangered Species Act* has the same potential for affecting upstream development as reserved water rights.

8. Other issues and concerns identified in the land-use planning process.

None

Conclusion of Suitability Determination. The outstandingly remarkable values of Soldier Creek would be more appropriately managed under an ACEC designation rather than as a component of the National Wild and Scenic Rivers System. The reasons for this determination are:

1. Protection of the Colorado River cutthroat trout and its habitat in Soldier Creek would be effective without designation as a wild and scenic river.

2. Designation of an ACEC would allow for protective measures to be applied to all activities within the watershed. Wild and scenic river designation would only apply to a narrow 1/2-mile corridor along the study segment and would not add significant protection.

3. Costs of management would be essentially the same with either an ACEC or W&SR designation since values to be protected are natural values.

4. Acquisition of private inholdings would be possible under designation as an ACEC or a wild and scenic river.

Summary of Analysis. Soldier Creek is free-flowing and has outstandingly remarkable fisheries and sensitive plant species; it is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is wild. Based upon the facts presented in the Conclusion of Suitability Determination, Soldier Creek is designated as non-suitable and is removed from further consideration under the provisions of the *W&SR Act*.

Bear Park Creek

The Bear Park Creek study segment begins at the source in T.5 S., R.102 W., secs.20 (north fork) and 28 (south fork), 6th PM and flows downstream to the confluence with East Douglas Creek in T.5 S., R.101 W., sec.2, 6th PM. Land ownership of the 5-mile river segment is as follows:

Bureau of Land Management	86 percent
Private Lands	14 percent
	100 percent

Appropriated instream flow is:

From the headwaters to the confluence with East Douglas Creek = 1.0 cubic feet/second

Eligibility Determination

Free-Flowing Determination. There are no diversions or impoundments along Bear Park Creek. Streamflow is perennial.

Outstandingly Remarkable Characteristics. Federal candidate species (eligibility criterion): Bear Park Creek contains Federal candidate Colorado River cutthroat trout.

Conclusion of Eligibility Determination. Bear Park Creek is free-flowing, contains one outstandingly remarkable value, and is eligible for further determination as a wild and scenic river.

Classification Analysis. There are beaver dams near the headwaters of Bear Park Creek, but no diversions or impoundments within the five mile corridor. A road parallels the creek, about 1/4-mile from the northwest side, joining the creek one mile below the confluence of the north and south forks. There are no stream crossings or agricultural lands within the study area. No oil or gas wells exist within the study corridor of Bear Park Creek.

Conclusion of Classification Analysis. Bear Park Creek satisfies the criteria for tentative classification as scenic.

Suitability Determination

1. Characteristics that do or do not make the area a worthy addition to the national wild and scenic rivers system.

The outstandingly remarkable value that qualifies Bear Park Creek as being eligible for inclusion is the candidate threatened fisheries for the Colorado River cutthroat trout.

Management of the values under the provisions of the Wild and Scenic River System would not provide for watershed protection outside of the designated 1/4-mile corridor.

2. Current status of land ownership, use in the area, including the amount of private land involved and associated or incompatible uses.

There is 86 percent BLM and 14 percent private land within the Bear Park Creek study segment. Non-federal ownership affects a insignificant portion of the drainage. Oil and gas leasing and development has affected the drainage with a moderate amount of past development. The study area is considered as having a high potential for oil and gas resource development.

3. The reasonably foreseeable potential uses of the land and related waters, which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRs.

Most discretionary actions on public lands in the Bear Park Creek corridor would be restricted, subject to valid existing rights, under either designation as an ACEC or under the *W&SR Act*. Existing oil and gas leases could be developed under wild and scenic river designation.

It is not anticipated that any outstandingly remarkable values would be diminished or foreclosed if the segment is not designated, since values would be protected under the *Endangered Species Act* and BLM policy governing sensitive species. Special management attention would be required for the entire watershed under the preferred alternative.

4. Federal, public, state, tribal, local or other interests in designation or nondesignation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by state, local or other agencies and individuals.

There has been no interest expressed by the public or other entities regarding designation throughout the scoping and workshop meetings held for the RMP/EIS. Public input on recommendations for wild and scenic river designation or non-designation will be accomplished with release of the draft RMP/EIS.

The only managing agencies in the vicinity are the Colorado Division of Wildlife (CDOW) and the BLM. The CDOW would continue their support for management of the fisheries in Bear Park Creek regardless of wild and scenic river designation. No other public group or agency has expressed an interest in assisting with management of the drainage being studied.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and of administering the area if it is added to the NWSRs.

Bear Park Creek could be managed to provide for value protection without acquiring private lands. Private ownership within the study segment is less than 20%. Acquisition of additional private acreage to protect the free-flowing condition and fisheries would not be justified under the current level of development. Inholdings may become available from willing sellers and could be acquired. Wild and scenic river designation would not ensure acquisition of critical lands within the watershed outside of the 1/4-mile corridor (320 acres/mile).

6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river.

Because of the current attention paid to wildlife management in this area, it would not be difficult for the BLM to incorporate considerations to maintain or protect values under current management guidelines. If designated, the management plan could enact cooperative agreements with private landowners regarding the management and protection of outstandingly significant values along Bear Park Creek. This approach would be preferred in lieu of fee simple acquisition or the acquisition of easements. Some landowners would be willing participants while others would not.

7. Historical or existing rights which would be adversely affected by designation.

No existing rights have been identified along Bear Park Creek that would be immediately effected as a result of designation. Existing private property rights would be completely unaffected. Land purchases, exchanges, or

easement acquisitions would be carried out only with willing sellers. Unpatented mining claims would predate W&SR designation and thus would remain valid as long as proper diligence and filing are kept up. No new mining claims would be allowed within the study corridor.

Congressional designation as a wild and scenic river will specify reserved water rights for the study segment or, in some cases, Congress can designate a wild and scenic river without specifying water rights. If no water rights are specified, courts will commonly refer back to the *W&SR Act* to state that designation automatically implies a reserved water right. Although BLM and other concerned parties may make recommendations concerning water rights following an affirmative suitability determination, Congress retains the right to specify exactly how water rights are to be handled.

The quantity of a reserved right, as specified by Congress, would be the minimum amount necessary to protect the outstandingly remarkable value(s) within the designated river segment. Congressional intent is to minimize the impact that the *W&SR Act* has on state water laws and state water rights, while still protecting the river. The minimum level of instream flow through Bear Park Creek necessary to sustain a viable population of Colorado River cutthroat trout has not yet been determined but, if the river is designated as wild and scenic, this level of flow will need to be identified.

Reserved water rights, either specified or implied as a result of wild and scenic river designation, would be junior to existing rights on the river. However, in the event of future development upstream of the segment, the potential exists for a junior reserved water right to block applications for changes by senior water rights holders. These applications might include changes in type and place of use, changes in point of diversion, or water augmentation (substitution) plans. A junior right may block applications for changes of senior water rights because the junior right is entitled by law to river conditions as they were at the time the junior right was awarded.

The protection of Colorado River cutthroat trout under the *Endangered Species Act* has the same potential for affecting upstream development as reserved water rights.

8. Other issues and concerns identified in the land-use planning process.

None

Conclusion of Suitability Determination. The outstandingly remarkable values of Bear Park Creek would be more appropriately managed under an ACEC designation rather than as a component of the National Wild and Scenic Rivers System. The reasons for this determination are:

1. Protection of the Colorado River cutthroat trout and its habitat in Bear Park Creek would be effective without designation as a wild and scenic river.

2. Designation of an ACEC would allow for protective measures to be applied to all activities within the watershed. Wild and scenic river designation would only apply to a narrow 1/2-mile corridor along the study segment and would not add significant protection.

3. Costs of management would be essentially the same with either an ACEC or W&SR designation since values to be protected are natural values.

4. Acquisition of private inholdings would be possible under designation as an ACEC or a wild and scenic river.

Summary of Analysis. Bear Park Creek is free-flowing and has outstandingly remarkable fisheries; it is eligible for consideration as a potential wild and scenic river. The tentative classification for this segment is scenic. Based upon the facts presented in the Conclusion of Suitability Determination, Bear Park Creek is designated as non-suitable and is removed from further consideration under the provisions of the *W&SR Act*.

MANAGEMENT GUIDELINES FOR ELIGIBLE RIVERS

The *W&SR Act* provides some guidance for management of study rivers until designation by Congress or released to other use. The Act states "Each component of the National Wild and Scenic Rivers System shall be administered in such a manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration, primary emphasis shall be given to protecting its aesthetic, scenic, historic, archeological, and scientific features. Management plans for any such component may establish varying degrees of

intensity for its protection and development, based on the special attributes of the area." (Sec. 10(a) *W&SR Act*.)

Once a river is determined eligible and classified as wild, scenic or recreational, it must be afforded adequate protection until a decision of designation is made by Congress. In general, management prescriptions for river corridors identified for study should provide protection in the following ways:

1. Free-flowing characteristics of identified river segments cannot be modified to allow stream impoundments, diversions, channelization, and/or riprapping (to the extent that Federal agencies are authorized under law to prohibit such actions).

2. Outstandingly remarkable values of the identified river segment or area must be protected (subject to valid existing rights) and, to the extent practicable, enhanced.

3. Management and development of the identified river and corridor cannot be modified, subject to valid existing rights, to the degree that eligibility or classification would be affected (i.e., classification cannot be changed from wild to scenic to recreational).

Protective management of eligible study segments in the White River Resource Area will be managed under the standards established in the *W&SR Act* (*Public Law 90-542* as amended) and the 1982 U.S. Department of Agriculture/Department of Interior Management Guidelines for National Wild and Scenic Rivers.

BLM land within the study corridor of the following eligible river segments will be provided protective management until the Resource Management Plan/Record of Decision is signed:

White River, South Fork
White River, Segment B
White River, Segment C
Big Beaver Creek
East Douglas Creek
Cathedral Creek
Lake Creek
Soldier Creek
Bear Park Creek

Table J-1 provides a management goal for each river classification. Under each classification, specific guidelines for interim management of each study section are detailed. Rivers recommended for designation must ultimately be designated by Congress to be added to the National Wild and Scenic Rivers System.

Table J-1. Management Goals for Each Classification

Land Use Practices(s)	Wild River Classification	Scenic River Classification	Recreational River Classification
Forestry Practices	Cutting of trees will not be permitted except when needed in association with a primitive recreation experience (such as clearing for trail and for visitor safety) or to protect the environment (such as control of fire). Timber outside the boundary but within the visual corridors will be managed and harvested in a manner to provide special emphasis on visual quality.	Forestry practices including timber harvesting could be allowed provided that such practices are carried out in such a way that there is no substantial adverse effect on the river and its immediate environment. The river area should be maintained in its near natural environment. Timber outside the boundary but within the visual area should be managed and harvested in a manner that provides special emphasis on visual quality.	Forestry practices including timber harvesting would be allowed under standard restrictions to protect the river environment and its associated values.
Agricultural Practices and Livestock Grazing	Agricultural use is restricted to a limited amount of domestic livestock grazing and hay production to the extent currently practiced. Row crops are prohibited.	A wider range of agricultural and livestock grazing uses is permitted to the extent currently practiced. Row crops are not considered as an intrusion on the "largely primitive" nature of scenic corridors as long as there is not a substantial adverse effect on the natural appearance of the river.	Lands may be managed for a full range of agricultural and livestock grazing use to the extent currently practiced.
Road and Trail Construction	No new roads nor other provisions for overland motorized travel would be permitted within a narrow incised river valley, or if the river valley is broad, within .25 mile of the river corridor. A few inconspicuous roads leading to the boundary of the river area and unobtrusive trail bridges may be permitted. New trails may be constructed provided they do not detract from the essentially primitive character of the area.	Roads may occasionally bridge the river area, and short stretches of conspicuous or longer stretches of inconspicuous and well-screened roads or screened railroads could be allowed. Maintenance of existing roads and any new roads will be based on the type of use for which the roads are constructed and the type of use that will occur in the river area. New trails may be constructed to enhance the values for which the river was designated.	Parallel roads or railroads could be constructed on one or both river banks. There can be several bridge crossings and numerous river access points. New trails may be constructed as long as there is no conflict with other river values.
Minerals	New mining claims and mineral leases are prohibited within 1/4 mile of the normal high water line on either side of the river. Valid existing claims would not be abrogated and, subject to existing regulations (43 CFR 3809) that the Secretary of Interior may prescribe to protect the river included in the national system, existing mining activity would be allowed to continue. All mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment. Reasonable mining claim and mineral lease	Subject to existing regulations (43CFR 3809) and any future regulations that the Secretary of Interior may prescribe to protect the values of rivers included in the national system, new mining claims and mineral leases could be allowed and existing operations allowed to continue. All mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution, and visual impairment. Reasonable mining claim and mineral lease access will be permitted. Mining	Subject to existing regulations (43 CFR 3809) and any future regulations that the Secretary of Interior may prescribe to protect the values of rivers in the national system, new mining claims and mineral leases could be allowed and existing operations allowed to continue. All mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution and visual impairment. Reasonable mining claim and mineral lease access will be permitted. Mining claims perfected after the effective date of the recreational claims perfected after the effective date of the

Table J-1 continued

Land Use Practices(s)	Wild River Classification	Scenic River Classification	Recreational River Classification
Minerals (continued)	*Minerals continued.* access will be permitted. Mining claims beyond the 1/2-mile corridor, but within the wild riverarea boundary, and perfected after the effective date of the wild river designation, can be patented only as to the mineral estate and not the surface estate.	scenic river designation can be patented only as to the mineral estate and not the surface estate.	river designation can be patented only as to the mineral estate and not the surface estate.
Water Quality	Water quality will be maintained or improved to meet Federal criteria or federally approved state standards. River management plans shall prescribe a process for monitoring water quality on a continuing basis.	Same as for a wild segment	Same as for a wild segment.
Water Supply	Water supply dams and major diversions are prohibited.	Water supply dams and major diversions are prohibited. Maintenance of existing facilities and construction of some minor new diversion structures would be permitted provided the area remains natural in appearance and the activities or structures harmonize with the surrounding environment.	New major water structures are prohibited. Existing low dams, diversion works, riprap, and other minor structures may be maintained provided the waterway remains generally natural in appearance. New minor diversion structures or management practices, e.g., water bars, diversion ditches, etc., may be allowed provided the area remains generally natural in appearance and the structures harmonize with the surrounding environment.
Flood Control	No new flood control dams, levees, or other works are allowed in the channel or river corridor. The natural appearance and essential primitive character of the river must be maintained.	Flood control dams and levees are prohibited. Existing structures protecting major improvements, homes, bridges, highways, etc., may be maintained.	Existing flood control and protection works may be maintained. New structures to provide bank stabilization such as rock or log placement, must not affect free-flowing characteristics nor conflict with outstandingly remarkable values. In addition, new structures must be compatible with classification and the area must remain natural in appearance with structures harmonizing with the environment.
Hydroelectric Power	No development of hydroelectric power facilities would be permitted.	Same as for wild segment.	Same as for a wild segment.
Groundwater	Federal agency groundwater development for range, wildlife, recreation, or administrative facilities may be permitted if there are no adverse effects on outstandingly remarkable values.	Same as for a wild segment.	Same as for a wild segment.

Table J-1 continued

Land Use Practices(s)	Wild River Classification	Scenic River Classification	Recreational River Classification
Protection: Fire Presuppression and Suppression	Presuppression and prevention activities will be conducted in a manner that reflects management objectives for the specific river segment. Prescribed fire may be utilized to maintain or restore desired ecological conditions or to meet objectives specified in the river management plan. Management and suppression of fires within a designated river area will be accomplished in a manner compatible with contiguous Federal lands. On wildfires, methods will be utilized to minimize suppression activities that cause long-term impacts on the river and river area.	Same as for a wild segment.	Same as for a wild segment.
Insects, Disease, and Noxious Weeds	The control of forest and rangeland pests, diseases, and noxious weed infestations will be accomplished in a manner compatible with the intent of the Act and management objectives of contiguous Federal lands.	Same as for a wild segment.	Same as for a wild segment.
Cultural Resources	Historic and prehistoric resource sites will be identified, evaluated, and protected in a manner compatible with the management objectives of the river and in accordance with applicable regulations and policies. Where appropriate, historic or prehistoric sites will be stabilized, enhanced, and interpreted.	Same as for a wild segment.	Same as for a wild segment.
Fish and Wildlife Habitat Improvement	The construction and maintenance of minor structures for protection, conservation, rehabilitation, or enhancement of fish and wildlife habitat are acceptable in wild river areas provided they do not affect the free-flowing characteristics of the river, or conflict with the outstandingly remarkable values. In addition, structures and practices should be compatible with the classification, ensure the area remains natural in appearance, and harmonize with the surrounding environment.	Same as for a wild segment.	Same as for a wild segment.

Table J-1 continued

Land Use Practices(s)	Wild River Classification	Scenic River Classification	Recreational River Classification
Wilderness Study Areas	Management of river areas that overlap designated wilderness or wilderness study areas will meet whichever standard is highest. If an area is released from a wilderness study area status and the associated interim management policy, the applicable river classification guidelines and standards would apply.	Same as for a wild segment	Same as for a wild segment.
Visual Resources	Preservation of existing landscape character through natural ecological change is the objective. Limited management activities are not precluded, provided any change to the characteristic landscape is low and does not attract attention.	Retention of the existing landscape character is the objective. Management activities can occur, provided the change to the characteristic landscape is low and does not attract the attention of the casual observer.	Partial retention of the existing landscape character is the objective. Management activities can occur, provided the change to the characteristic landscape is no more than moderate and does not dominate the view of the casual observer.
Public Access and Use	Recreation use including but not limited to hiking, fishing, hunting, and boating is encouraged in river areas to the extent consistent with the protection of the river environment and the outstandingly remarkable values. Public use and access may be regulated and distributed where necessary to protect and enhance river values.	Same as for a wild segment.	Same as for a wild segment.
Motorized Travel	Motorized travel on land or water could be permitted, but is generally not compatible with this classification. Normally, motorized use will be prohibited in a wild river area. Prescriptions for management of motorized use may allow for search and rescue and other emergency situations.	Motorized travel on land or water may be permitted, prohibited, or restricted to protect the river values. Prescriptions for management of motorized use may allow for search and rescue and other emergency situations.	Motorized travel on land will generally be permitted on existing roads. Controls will usually be similar to that of surrounding lands. Motorized travel on water will be in accordance with existing regulations or restrictions.
Rights-of-Way, Utilities	New transmission lines, natural gas lines, water lines, etc., are discouraged unless specifically prohibited outright by other plans, orders, or laws. Where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way. Where new rights-of-way are unavailable, locations and construction techniques will be selected to minimize adverse effects on river area related values and fully evaluated during the site selection process.	Same as for a wild segment.	Same as for a wild segment.

Table J-1 continued

Land Use Practices(s)	Wild River Classification	Scenic River Classification	Recreational River Classification
Facilities	Major public use areas, such as large campgrounds, interpretive centers, or administrative headquarters are located outside the wild river area. Simple comfort and convenience facilities, such as toilets, tables, fireplaces, shelters, or refuse containers may be provided as necessary within the river area. These should harmonize with the surroundings. Unobtrusive hiking and horseback-riding trailbridges could be allowed on tributaries, but would not normally cross the designated river.	Larger scale public use facilities such as moderate size campgrounds, interpretive centers, and administrative headquarters are allowed if such structures are screened from the river. Modest and unobtrusive marinas also can be allowed.	Interpretive centers, administrative headquarters, campgrounds and picnic areas may be established in close proximity to the river.

Table J-2. River Description and Jurisdiction

Stream Name	Segment Description	Total Length	BLM Acres	Percent of Corridor
North Fork, White River	National forest boundary to confluence with South Fork	25	440	5
South Fork, White River	Source to confluence with North Fork	44	46	<1
White River Segment A	Confluence of north and south forks to Kenney Reservoir	75	4,200	16
White River Segment B	Taylor Draw Dam to Shavetail Bridge	22	2,400	33
White River Segment C	Shavetail Bridge to Colorado/Utah state line	11	768	22
Deer Gulch Creek	Source to confluence with Piceance Creek	4.5	1,140	82
Piceance Creek	Source to confluence with White River	57	5,050	34
East Douglas Creek	Source to confluence with Tommy's Draw	20	3,190	61
Cathedral Creek	Source to confluence with East Douglas Creek	14	2,064	54
Lake Creek	Source to confluence with Cathedral Creek	14	2,520	56
Soldier Creek	Source to confluence with East Douglas Creek	13	1,520	41
Bear Park Creek	Source to confluence with East Douglas Creek	5	980	86
Big Beaver Creek	Source to Lake Avery	18	280	8

Table J-3. Outstandingly Remarkable River Values

Stream Name	Description of Values - Outstandingly Remarkable or Less Than Outstandingly Remarkable
North Fork, White River	Forest Service EIS identified no outstandingly remarkable values and free-flowing condition impaired by numerous modifications for construction of ponds and irrigation.
South Fork, White River	High quality scenery, recreational whitefish fishing, and pastoral setting. USFS portions include 25 miles in Flat Tops Wilderness with outstandingly remarkable scenery associated with South Fork Canyon.
White River, Segment A	Scattered, regionally significant stands of remnant riverine cottonwood communities, bald eagle nests and winter roosts. Locally significant recreational fisheries (mountain whitefish, trout), proposed critical habitat designation for federally-listed Colorado River squawfish and candidate flannelmouth sucker and roundtail chub. Free-flowing condition impaired by modifications for riprapping, irrigation diversions, channel modifications.
White River, Segment B	Proposed critical habitat designation for federally listed Colorado River squawfish and candidate flannelmouth sucker and roundtail chub. Bald eagle winter roost sites, remnant riverine cottonwood associations.
White River, Segment C	Proposed critical habitat designation for federally listed Colorado River squawfish and candidate flannelmouth sucker and roundtail chub. Bald eagle winter roost sites, remnant riverine cottonwood associations. Regionally recognized outstandingly remarkable canoe and boating stream with excellent desert canyon scenery.
Deer Gulch Creek	Included in Deer Gulch ACEC; locally recognized significant element as the only relatively undisturbed perennial stream system flowing through the Green River Formation in the Piceance Basin.
Piceance Creek	Modifications include numerous minor irrigation diversions and low water crossings.
East Douglas, Cathedral and Lake Creeks	High value riparian habitat. Federal candidate Colorado River cutthroat trout habitat and population possessing a purity rating of "C" (moderate levels of hybridization with rainbow trout evident).

Table J-3 continued

Stream Name	Description of Values - Outstandingly Remarkable or Less Than Outstandingly Remarkable
Soldier Creek	Upper portion of watershed in Soldier Creek ACEC for protection of a relatively undisturbed watershed with an adequate supply of water for the perpetuation of rare and sensitive plant species: *Sullivantia purpusii* and *Aquilegia barneyi*. Lower reaches are habitat for population of Colorado River cutthroat trout (purity rating of "C").
Bear Park Creek	No diversions along this perennial stream containing federal candidate Colorado River cutthroat trout.
Big Beaver Creek	No diversions along this perennial stream containing federal candidate Colorado River cutthroat trout.

Table J-4. River Classification Criteria

Attribute	Wild	Scenic	Recreational
Water Quality	Meets or exceeds federal criteria or federally approved state standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	No criteria prescribed by the *W&SR Act*. The Clean Water Act of 1977 made it a national goal that all waters of the United States be made fishable and swimmable. Rivers, therefore, will not be precluded from scenic or recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists or is being developed in compliance with applicable federal and state laws.	
Water Resources Development	Free of impoundment	Free of impoundment	Some previous impoundments or diversion. The existence of low head dams, diversions, or other modifications of the waterway remains generally natural and riverine in appearance.
Shoreline Development	Essentially primitive. Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable. A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	Largely primitive and undeveloped. No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable. The presence of grazing, hay production, or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Some development. Substantial evidence of human activity. The presence of extensive residential development and a few commercial structures is acceptable. Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvests.
Accessibility	Generally inaccessible except by trail. No roads, railroads, for vehicular travel or other provisions within the river area. A few existing roads leading to the boundary of the river area is acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or trail. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.

GLOSSARY AND REFERENCES

GLOSSARY

ABANDONMENT. Abandonment is plugging of a well, removal of installations, and termination of operations for production from a well. Conclusively, abandoned unpatented oil place mining claims are subject to conversion into a noncompetitive oil and gas lease pursuant to the Federal Oil and Gas Royalty Management Act of 1982 (30 U.S.C. 199(f)).

ACTIVITY PLANNING. Site-specific planning which precedes actual development, the most detailed level of BLM planning.

AIR QUALITY CLASSES. Classifications established under the Prevention of Significant Deterioration (a portion of the Clean Air Act which limits the amount of air pollution) is considered significant within an area. Class I applies to areas where almost any change in air quality would be significant. Class II applies to areas where the deterioration normally accompanying moderate well-controlled growth would be permitted. Class III applies to areas where industrial deterioration would generally be allowed.

ALLOTMENT MANAGEMENT PLAN. A concisely written program of livestock grazing management, including supportive measures if required, designed to attain specific multiple-use management goals in a grazing allotment.

ALLOTMENT CATEGORIZATION. As an aid in prioritizing grazing allotments for grazing management system development, all allotments have been tentatively placed into one of three categories: (1) Maintain or "M", (2) Improve or "I", and (3) Custodial or "C". Allotments within each category do not have to meet all the criteria to be managed according to the category objectives. Category criteria are:

"M" (MAINTAIN) CATEGORY CRITERIA. Present range condition is satisfactory, allotments have moderate or high resource production potential (or trend is moving in that direction), no serious resource-use conflicts/controversy exist, opportunities may exist for positive economic return from public investments, and present management appears satisfactory.

"I" (IMPROVE) CATEGORY CRITERIA. Present range condition may be unsatisfactory, allotments have moderate to high resource production potential and are producing at low to moderate levels, serious resource-use conflicts/controversy exist, opportunities exist for positive economic return from public investments, and present management appears unsatisfactory.

"C" (CUSTODIAL) CATEGORY CRITERIA. Present range condition is not a factor, allotment have low resource production potential and are producing near their potential, limited resource-use conflicts/controversy may exist, opportunities for positive economic return on public investments do not exist or are constrained by technological or economic factors, and present management appears satisfactory or is the only logical practice under existing resource conditions.

ALLOTMENT. An area of land where one or more operators graze their livestock. It generally consists of public lands but may include parcels of private or State-owned lands. The number of livestock and period of use are stipulated for each allotment.

ALLOWABLE CUT. The amount of timber which can be harvested on an annual or decadal basis consistent with the principle of sustained yield. The allowable cut includes all planned timber harvest volumes exclusive of such products as Christmas trees, branches, and cones.

AMBIENT AIR QUALITY. The state of the atmosphere at ground level as defined by the range of measured and/or predicted ambient concentrations of all significant pollutants for all averaging periods of interest.

ANIMAL UNIT MONTH. The amount of forage necessary to sustain one cow and one calf or its equivalent for one month.

APPLICATION. A written request, petition, or offer to lease lands for the purpose of oil and gas exploration and/or the right of extraction.

AREA OF CRITICAL ENVIRONMENTAL CONCERN. An area established through the planning process, as provided in FLPMA, where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, paleontological or scenic values, or to fish and wildlife resources or other natural systems or processes, or to protect life and afford safety from natural hazards.

BEST MANAGEMENT PRACTICE. A practice, or a combination of practices, determined by a State or a designated planning agency to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

BIG GAME. Larger species of wildlife that are hunted, such as elk, deer, bighorn sheep, and pronghorn antelope.

BLM LAND. Land administered by the Bureau of Land Management.

CANDIDATE SPECIES. Any species not yet officially listed but which are undergoing a status review or are proposed for listing according to Federal Register notices published by the Secretary of the Interior or the Secretary of Commerce.

CLIMAX PLANT COMMUNITY. The final vegetative community that emerges after a series of successive vegetational stages. It represents the highest ecological development of a plant community capable of perpetuation under the prevailing climate and soil conditions.

COAL UNSUITABILITY CRITERIA. Regulations developed by the BLM which use the ability of an area's surface resources to accept or absorb the impact of coal mining activities as a means to determine the suitability or unsuitability of the area for coal mining.

COMMERCIAL FOREST LAND(S). Forest land (all species of trees) which is producing or is capable of producing 20 cubic feet per acre per year.

CONDITION OF APPROVAL. Conditions or provisions (requirements) under which an Application for a Permit to Drill or a Sundry Notice is approved.

CONDITIONAL FIRE SUPPRESSION. Areas where the intensity of fire suppression actions is not fixed and will vary with the conditions existing at the time the fire starts. These areas are managed on a lease-cost basis.

CONTROLLED SURFACE USE. Use and occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational constraints that may modify the lease rights. CSU is used for operating guidance, not as a substitute, for the NSO or timing stipulations.

CULTURAL RESOURCES. Those fragile and nonrenewable remains of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human events.

CULTURAL RESOURCES INVENTORY CLASSES:

CLASS I. An existing data survey. This is an inventory of a study area to: (1) provide a narrative overview of cultural resources by using existing information, and (2) compile existing cultural resources site record data on which to base the development of the BLM's site record system.

CLASS II. A sampling field inventory designed to locate, from surface and exposed profile indications, all cultural resource sites within a portion of an area so that an estimate can be made of the cultural resources for the entire area.

CLASS III. An intensive field inventory designed to locate, from surface and exposed profile indications, all cultural resource sites in an area. Upon its completion, no further cultural resources inventory work is normally needed.

CUMULATIVE IMPACTS. The collective and aggregate impacts of all actions affecting a particular resource.

DISPOSAL. Transfer of ownership of a tract of public land from the United States to another party through sale, exchange, transfer under the *Recreation and Public Purposed Act*, or desert land entry.

DIVERSITY. The relative abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

ECOLOGICAL SITE. A distinctive geographic unit that differs from other kinds of geographic units in its ability to produce a characteristic natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other ecologic sites in the kind or portion of species or in total production.

ECOLOGICAL STATUS. The present state of vegetation of a range site in relation to the potential natural community for the site. Ecological status is use independent. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of the potential natural community. The four ecological status classes correspond to 0-25, 26-50, 51-75, or 76-200 percent similarity to the potential natural community and are called: early-seral, mid-seral, late-seral, and potential natural community, respectively.

ECOSYSTEM. Collectively, all populations in a community plus the associated environmental factors.

ENDANGERED SPECIES. Any species which is in danger of extinction throughout all or a significant portion of its range.

ENVIRONMENTAL ASSESSMENT. A concise public document prepared to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. It includes a brief discussion of the need for the proposal, alternatives considered, environmental impact of the proposed action and alternatives, and a list of agencies and individuals consulted.

ENVIRONMENTAL IMPACT STATEMENT. A formal public document prepared to analyze the impacts on the environment of a proposed project or action and released for comment and review. An EIS must meet the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the proposed project or action.

EXCEPTION. Case-by-case exemption from a lease stipulation. The stipulation continues to apply to all other sites within the leasehold to which the restrictive criteria applies.

FIRE SUPPRESSION. Areas where fire suppression is required in order to prevent unacceptable resource damage and/or to prevent loss of life and property.

FISHERY, FISHERY STREAM. A body of water capable of producing and sustaining fishery populations.

FORAGE. All browse and herbaceous foods that are available to grazing animals.

FOREST MANAGEMENT UNIT. A specific geographic area for which a FMP would be prepared and in which intensive management of commercial forest land(s) would occur.

FRAGILE SOIL. A soil that is especially vulnerable to erosion or deterioration due to its physical characteristics and/or location. Disturbance to the surface or the vegetative cover can initiate a rapid cycle of loss and destruction of the soil material, structure, and ability to sustain a biotic community. Areas included as fragile soil are:

a. Areas rated as highly or severely erodible by wind or water, as described by the Soil Conservation Service in the Area Soil Survey Report or as described by onsite inspection.

b. Areas with slopes greater than or equal to 35 percent, if they also have one of the following soil characteristics: (1) a surface texture that is sand, loamy sand, very fine sandy loam, fine sandy loam, silty clay or clay, (2) a depth to bedrock that is less than 20 inches, (3) an erosion condition that is rated as poor, or (4) a K factor of greater than 0.32.

FRAGILE SOIL/SLOPE GRADIENT. Problem sites where unstable landforms and unstable or erosive soils are made more vulnerable to degradation by steep slopes.

GRAZING SYSTEM. Scheduled grazing use and non-use of an allotment to reach identified goals or objectives by improving the quality and quantity of vegetation.

GROUNDWATER. Water beneath the land surface in the zone of saturation.

HABITAT. A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

IMPACT. The effect, influence, alteration, or imprint caused by an action.

GLOSSARY

INTEGRATED ACTIVITY PLAN. An activity level plan completed for more than one resource in a given area/site, usually when conflicts or potential conflicts could occur between various resource activities.

INTENSIVE FIRE SUPPRESSION. Areas where a full complement of equipment and work force is used to contain, control, and suppress wildfire.

INTERIM MANAGEMENT POLICY. The Department of Interior policy that mandates the BLM to manage lands under wilderness review so as not to impair wilderness values and to protect the right of Congress to make the wilderness designation decision.

KEY AREA. A relatively small portion of a rangeland selected because of its location, use, or grazing value as an area on which to monitor the effects of grazing use. It is assumed that key areas, if properly selected, will reflect the effects of current grazing management over all or a part of a pasture, allotment, or other grazing unit.

KEY SPECIES. (1) Those species which must, because of their importance, be considered in a management program, or (2) forage species whose use serves as an indicator to the degree of use of associated species.

LAND TREATMENT. All methods of artificial range improvement and soil stabilization such as reseeding, brush control (chemical and mechanical), pitting, furrowing, water spreading, etc.

LEASE. A contract in legal form that provides for the right to develop and produce resources for a specific period of time under certain agreed upon terms and conditions.

LEASEABLE MINERALS. Those minerals or materials designated as leaseable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulphur, potassium and sodium minerals, and oil and gas. Geothermal resources are also leaseable under the Geothermal Steam Act of 1970.

LEASE NOTICE. Provides more detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. A Lease Notice also addresses special items the lessee would consider when planning operations, but does not impose new or additional restrictions.

LITHIC SITE. An archaeological site containing debris left from the manufacture, use or maintenance of flaked stone tools.

LOCATABLE MINERALS. Minerals or materials subject to claim and development under the Mining Law of 1872, as amended. Generally includes metallic minerals such as gold and silver and other materials not subject to lease or sale (some bentonites, limestone, talc, some zeolites, etc.).

LOCATION. Perfecting the right to a mining claim by discovery of a valuable mineral, monumenting the comers, completing discovery work, posting a notice of location, and recording the claim.

LONG-TERM. Long-term impacts would occur over a 20-year period.

MANAGEMENT FRAMEWORK PLAN. A land use plan that establishes land use allocations, multiple-use guidelines, and management objectives for a given planning area. The MFP planning system was used by the BLM until about 1980.

MASS WASTING. Dislodgement and downslope transport of earthen material as a unit, such as in landslides, rockslides, and earthflows.

MINERAL ENTRY. Claiming public lands (administered by the BLM) under the Mining Law of 1872 for the purpose of exploiting minerals. Mineral entry may also refer to mineral exploration and development under the mineral leasing laws and the Material Sale Act of 1947.

MINERAL MATERIALS. Common varieties of sand, building stone, gravel, clay, moss rock, etc., obtainable under the *Minerals Act of 1947*, as amended.

MITIGATION. Alleviation or lessening of possible adverse effects on a resource by applying appropriate protective measures or adequate scientific study.

MODIFICATION. Fundamental change to the provisions of a lease stipulation, either temporarily or for the term of the lease. A modification may, therefore, include an exemption from, or alteration to, a stipulated requirement. Depending on the specific modification, the stipulation may or may not apply to all other sites within the leasehold to which the restrictive criteria applied.

MULTIPLE-USE. Management of the various surface and subsurface resources so they are jointly utilized in the manner which will best meet the present and future needs of the public, without permanent impairment of the productivity of the land or the quality of the environment.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA). Public Law 91-190. Establishes environmental policy for the Nation. Among other items, NEPA requires Federal agencies to consider environmental values in decision-making processes.

NATIONAL REGISTER OF HISTORIC PLACES (NATIONAL REGISTER). A listing of architectural, historical, archaeological, and cultural sites of local, state, or national significance, established by the Historic Preservation Act of 1966 and maintained by the National Park Service.

NO SURFACE DISTURBANCE. Defined on a case-by-case basis when the activity plan for an area is developed. In general, an activity would be allowed so long as it does not interfere with the management objectives of the area.

NO SURFACE OCCUPANCY. A fluid mineral leasing stipulation which prohibits occupancy or disturbance on all or part of the lease surface in order to protect special values or uses. Lessees may develop the oil and gas or geothermal resources under leases restricted by this stipulation through use of directional drilling from sites outside the no surface occupancy area.

NONDISCRETIONARY CLOSURES. Areas specifically closed to energy and/or mineral leasing, entry or disposal by law, regulation, secretarial decision, or Executive Order.

NONGAME SPECIES. Those species not commonly harvested either for sport or profit.

OFF-HIGHWAY VEHICLE. Any motorized vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain.

GLOSSARY

PALEONTOLOGICAL RESOURCE. A site containing nonhuman life of past geological periods, usually in the form of fossil remains.

PATENT. A grant made to an individual or group conveying fee simple title to selected public lands.

PATENTED CLAIM. A claim on which title has passed from the federal government to the mining claimant under the *Mining Law of 1872*.

POTENTIAL NATURAL COMMUNITY. The biotic community that would become established if all successional sequences were completed without interferences by man under the present environmental conditions. Natural disturbances are inherent in development. Includes naturalized non-native species.

PRESCRIBED FIRE (PRESCRIBED BURNING). Application of fire to natural fuels under specific conditions of weather, fuel moisture, soil moisture, smoke, and other conditions intended to produce the intensity of heat and rate of spread required to accomplish certain objectives of wildlife habitat or livestock grazing management and/or hazard reduction.

PRIMITIVE. Areas that are almost completely free of management controls lying more than three miles from the nearest point of motor vehicle access, unmodified landscapes and little evidence of other people.

PRIMITIVE AND UNCONFINED RECREATION. Nonmotorized and undeveloped types of outdoor recreation.

PUBLIC LAND. Any land and interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

RANGE CONDITION. See ecological status.

RANGELAND. A kind of land which supports vegetation useful for grazing on which routine management of that vegetation is through manipulation of grazing rather than cultural practices. (Rangeland includes natural grasslands, savannas, shrublands, most deserts, tundra, alpine communities, coastal marshes, riparian zones, and wet meadows. Rangeland also includes lands revegetated naturally or artificially to provide a plant cover which is management like native vegetation.)

RECLAMATION. Returning disturbed lands to a form and productivity which will be ecologically balanced and in conformity with a predetermined land management plan.

RECREATION AND PUBLIC PURPOSES ACT (R&PP). This Act authorizes the Secretary of the Interior to lease or convey public lands for recreational and public purposes under specified conditions to States or their political subdivisions and to non-profit corporations and associations.

RECREATION OPPORTUNITY SPECTRUM. A method for classifying the land by setting opportunity, according to the ability of the land to provide various types of physical, social, and managerial settings to satisfy the desires and expected behavioral preferences of the users.

RESOURCE AREA. A geographic portion of a BLM District that is the smallest administrative subdivision in the BLM.

RESOURCE MANAGEMENT PLAN. A land use plan that establishes land use allocations, multiple-use guidelines and management objectives for a given planning area. The RMP planning system has been used by the BLM since about 1980.

REST-ROTATION. A prescribed pattern of grazing use that provides sequential rest for various parts of the range unit for at least an entire year.

RIGHTS-OF-WAY CORRIDOR. A designated parcel of land, either linear or areal in character, that has been identified through the land use planning process as the preferred location for existing and future rights-of-way grants and would accommodate more than one type of right-of-way or one or more rights-of-way that are similar, identical, or compatible.

RIPARIAN. Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or subirrigation zone of streams, ponds, and springs.

RIPARIAN ZONE. An area encompassing riparian and adjacent vegetation.

ROADLESS. Refers to the absence of roads that have been constructed and maintained by mechanical means to ensure regular and continuous use.

ROADS. As used herein, a transportation facility used primarily by vehicles having four or more wheels, documented as such by the owner, and maintained for regular and continuous use.

SALABLE MINERALS. Minerals, such as common varieties of sand, stone, gravel, cinders, pumice, pumicite, and clay, that may be acquired under the Materials Act of 1947, as amended.

SEDIMENT YIELD. The amount of sediment produced in a watershed, expressed as tons, acre-feet, or cubic yards of sediment per unit of drainage area per year.

SEMIPRIMITIVE. Areas that have very few management controls lying between ½ mile and three miles from the nearest point of motor vehicle access, excepting four-wheel drive roads and trails, with mostly natural landscapes and some evidence of other people.

SENSITIVE SPECIES. A species included on the sensitive species list developed by the Colorado State Office pursuant to Section CL of Instruction Memorandum No. 80-722 and approved by the State Director.

SERAL STAGE. The present state of vegetation of an ecological site in relation to the potential natural community for the site. Vegetation status is the expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble those of the potential natural community. The classes are potential natural community, late-seral, mid-seral, and early-seral.

SEVERE WINTER RANGE. An area where 90 percent of the animals are located when the annual snowpack is at its maximum in the two worst winters out of ten.

SHORT-TERM. In this document, 10- to 12-year life of the plan is referred to. Short-term impacts would occur within that time period.

GLOSSARY

SHUT-IN. An oil or gas well which is capable of production but is temporarily not producing.

SPECIAL RECREATION MANAGEMENT AREA. An area that possesses outstanding recreation resources or where recreation use causes significant user conflicts, visitor safety problems, or resource damage.

SPLIT ESTATE. Lands where the owner of the mineral rights and the surface owner are not the same party in interest. The most common split estate is Federal-ownership of mineral rights and other interest ownership of the surface. The Federal government can lease the oil and gas rights without surface owner consent, where such a condition occurs.

STIPULATION. A provision that modifies standard lease rights and is attached to and made a part of the lease.

SUITABLE COMMERCIAL FOREST LANDS. Lands determined to have the capability of sustaining low-term timber production.

SUSTAINED YIELD. The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple-use.

THREATENED SPECIES. Any species or significant population of that species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Usually includes only those species which have been recognized and listed as threatened by Federal and State governments, but may include species categorized as rare, very rare, or depleted.

TIMBER. Standing trees, downed trees, or logs which are capable of being measured in board feet.

TIMING LIMITATION (SEASONAL RESTRICTION). Prohibits surface use during specified time periods to protect identified resource values. The stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

UNIQUE PLANT ASSOCIATIONS. Plant communities which: (1) occur only in Colorado, (2) are common elsewhere but are represented by only a few occurrences in Colorado, (3) could easily be eliminated from Colorado, or (4) are considered to be their natural state.

VALID EXISTING RIGHTS. Legal interests that attach to a land or mineral estate that cannot be divested from the estate until that interest expires or is relinquished.

VEGETATION MANIPULATION. Planned alteration of vegetation communities through use of prescribed fire, plowing, herbicide spraying, or other means to gain desired changes in forage availability, wildlife cover, etc.

VISUAL RESOURCE MANAGEMENT CLASSES. VRM classes identify the degree of acceptable visual change within a particular landscape. A classification is assigned to public lands based on the guidelines established for scenic quality, visual sensitivity, and visibility.

VRM CLASS I. This classification preserves the existing characteristic landscape and allows for natural ecological changes only. Includes Congressionally authorized areas (wilderness) and areas approved through the RMP where landscape modification activities should be restricted.

VRM CLASS II. This classification retains the existing characteristic landscape. The level of change in any of the basic landscape elements due (form, line, color, texture) to management activities should be low and not evident.

VRM CLASS III. This classification partially retains the existing characteristic landscape. The level of change in any of the basic landscape elements due to management activities may be moderate and evident.

VRM CLASS IV. This classification provides for major modifications of the characteristic landscape. The level of change in the basic landscape elements due to management activities can be high. Such activities may dominate the landscape and be the major focus of viewer attention.

VRM CLASS V. This classification applies to areas where the characteristic landscape has been so disturbed that rehabilitation is needed. Generally considered an interim short-term classification until rehabilitation or enhancement is completed.

WAIVER. Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

WETLAND OR WETLAND HABITAT. Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited, and where water depths generally do not exceed two meters. Vegetation is generally comprised of emergent water-loving forms (hydrophytes) which require at least a periodically saturated soil condition for growth and reproduction. In certain instances, vegetation may be completely lacking. Marshes, shallows, swamps, muskegs, lake bogs, and wet meadows are examples of wetlands.

WILDERNESS. An area formally designated by Congress as a part of the National Wilderness Preservation System.

WILDERNESS CHARACTERISTICS. Identified by Congress in the *Wilderness Act of 1964*, namely, size, naturalness, outstanding opportunities for solitude or a primitive and unconfined type of recreation and supplemental values such as geological, archaeological, historical, ecological, scenic, or other features.

WILDERNESS MANAGEMENT POLICY. Policy document prescribing the general objectives, policies, and specific activity guidance applicable to all designated BLM wilderness areas. Specific management objectives, requirements, and decisions implementing administrative practices and visitor activities in individual wilderness areas are developed and described in the wilderness management plan for each unit.

WILDERNESS STUDY AREA. An area determined to have wilderness characteristics. Wilderness study areas will be subject to interdisciplinary analysis through BLM land use planning system and public comment to determine wilderness suitability. Suitable areas

will be recommended to the President and Congress for designation as wilderness.

WITHDRAWAL. An action that restricts the use of public land and segregates the land from the operation of some or all of the public land and mineral laws. Withdrawals are also used to transfer jurisdiction of management of public lands to other Federal agencies.

WOODLANDS. Plant communities in which trees, often small and characteristically short-bowed relative to their depths of crown, are present but from only an open canopy, the intervening areas being occupied by lower vegetation, commonly grass. Woodland forests contain major and minor forest products (or any wood fibre) that has, or may have, merchantability.

REFERENCES

Ally, William A. 1982. Relative Importance of Groundwater and Surface Water Supplies to Oil Shale Department, Piceance Basin, Colorado. USGS OFR 82-340.

Archibald, J. David. 1987. Late Cretaceous (Judithian and Edmontonian) Vertebrates and Geology of the Williams Fork Formation, N.W. Colorado. Paper presented at the fourth symposium on Mesozoil terrestrial ecosystems, Tyrrell Museum of Paleontology, Drumheller, Alberta, Canada.

Armstrong, Harley. January 29, 1990. Discussion with Richard Fike, Gunnison RMP/EIS team member regarding formations potentially containing paleontological resources in the Gunnison RMP/EIS Planning Area. Museum of Western Colorado, Grand Junction, Colorado.

Armstrong, Harley J. and Steven G. Baker. 1985. A monitor and mitigation report for paleontological resources at the Chandler Locality (5RB2695), Rio Blanco County, Colorado. Centuries Research, Inc., Montrose, Colorado, and Grand River Institute, Grand Junction, Colorado.

Armstrong, Harley J. and David G. Wolney. 1989. Paleontological resources of Northwest Colorado: A Regional Analysis. Museum of Western Colorado, Grand Junction, Colorado.

Athearn, Frederic J. An isolated empire: A history of northwest Colorado. (BLM, Denver, 1982)

Autenrieth, Robert. 1983. Guidelines for the management of pronghorn antelope. Technical Report, Chapter III, Section B. Texas Parks and Wildlife Department.

Behnke and Zarn. 1976. Biology and management of threatened and endangered western trouts. In proceedings, forum on grazing and riparian/stream ecosystems. Livestock grazings and riparian/stream ecosysteman overview. Williams S. Patts, 1979. Oliver B. Cope Editor. Trout Unlimited, Inc., Denver, Colorado. Trout Unlimited.

Boyd, R. J. 1970. Elk of the White River Plateau, Colorado. Colorado Division Game, Fish and Parks Technical Publication Number 25. Denver. 126 pp.

Clary, Warren P. and Webster, Bert F. 1989. Managing grazing of riparian areas in the intermountain region. General Technical Report INT-263, pp. 1, 8-9. U.S. Department of Agriculture, Forest Service.

Clayton, Michael and Associated. 1986. Western regional corridor study. Report. Unpublished. Western Utility Group, Gunnison, Colorado, Gunnison Resource Area.

Cole, Sally J. 1990. Legacy on stone : Rock art for the Colorado plateau and four corners region. Boulder, Colorado. Colorado Department of Health. n.d. Various Colorado air quality data reports. Air Pollution Control Division, Denver, Colorado.

Colorado Department of Health, Water Quality Control Commission, 1983. Classification and Numeric Standards for Lower Colorado River Basin. Colorado Division of Local Government. Colorado economic and demographic information system C.E.D.I.S., and on-line computer access data base. Denver, Colorado.

Colorado Oil and Gas Conservation Commission. 1990. Oil and gas statistics. 1989. State of Colorado Department of Natural Resources, 576 pp.

Colorado School of Mines Quarterly. 1976. Coal deposits of the Carbondale, Grand Hogback, and southern Danforth Hills coal fields, Eastern Piceance Basin, Colorado. Vol. 71, No. 1, 138 pp.

Colorado Tourism Board. 1985 The economic impact of travel on Colorado counties 1984. A study prepared for the Colorado Tourism Board by the U.S. Travel Data Center. Denver, Colorado.

Conner, Carl E. and Diana L. Langdon. 1980. Intensive cultural resources inventory: Federal Sodium Lease C-0118326, Rio Blanco County, Colorado. Grand River Institute, Grand Junction, Colorado.

Creasman, Steven D. 1981. Archaeological investigations in the Canyon Pintado Historic District, Rio Blanco County, Colorado. Phase - I Inventory and test excavations. Reports of the Laboratory on Public Archaeology No. 34. Laboratory of Public Archaeology, Colorado State University, Fort Collins, Colorado.

Doi, Kentaro. 1990. Geology and paleontology of two primate families of the Raven Ridge, northwestern Colorado and northeastern Utah. Unpublished Masters Thesis, Department of Geological Sciences, University of Colorado, Boulder, Colorado.

Draft Piceance Basin Resource Management Plan and Environmental Impact Statement Floodplain Map. 1987. Federal Emergency Management Agency - Floodplain Map. Government Publication. Federal Emergency Management Agency.

Goodson, Mike J. 1982. Effects of domestic sheep on bighorn sheep populations. Paper pp. 3, 287-313. Northern Wildlife Sheep and Goat Council, Fort Collins, Colorado.

References

Grady, James. 1980. Environmental factors in archaeological site locations. CRS No.9. Colorado State Office, Bureau of Land Management, Denver, Colorado.

Hauck, F. Richard. 1990a. Cultural resource evaluations of Coors Energy Company's 1990 development of the proposed wells 2-21 TM and 1-29 TM in Rio Blanco County, Colorado. Archaeological-Environmental Research Corporation, Bountiful, Utah.

Hauck, F. Richard. 1990a. Cultural resource evaluation of a proposed pipeline corridor and associated access route corridor in the Banty Point locality Rio Blanco County, Colorado. Archaeological - Environmental Research Corporation, Bountiful, Utah.

Hibbert, Alden R. 1979. Managing vegetation to increase flow in the Colorado River Basin. General Technical Report RM-66, 27 pp. U.S. Department of Agriculture, Forest Service.

Hupp, Jerry W. 1987. Sage grouse distributions and habitats in the Gunnison\Basin, Colorado: recommendations for maintenance. Technical Report. Colorado Division of Wildlife.

Johnsgard, Paul A. 1973. Grouse and quails of North America. Book, Number 10, Sage Grouse. University of Nebraska Press.

Johnston, Robert S. and Brown, Ray W. 1979. Hydrologic aspects related to the management of alpine areas. Technical report. U.S. Department of Agriculture, Forest Service.

Kauffman, J.B. and Krueger, W.C. 1984. Livestock impacts on riparian ecosystems and streamside management implications; a review. Periodical pp. 430-437. Journal of Range Management.

Kinch, Gene. 1989. Riparian Area Management. Technical Reference 1737-4. U.S. Department of Interior,Bureau of Land Management.

LaPoint, Halcyon J., Howard M. Davidson, Steven D. Creasman and Daren C. Shubert. 1981. Archaeological investigations in the Canyon Pintado historic district, Rio Blanco County, Colorado: Phase II - Inventory and test excavations. Reports of the laboratory of public archaeology No. 53. Laboratory of Public Archaeology. Colorado State University, Fort Collins, Colorado.

Lucas, Spencer G. and Allen J. Kihm. 1982. Paleontological resources of part of Piceance Creek Basin, Colorado. ESCA - Tech Corporation, Albuquerque, New Mexico.

McPherson, Penny J. 1983. Piceance Basin Archaeology: A Class III cultural resource inventory of Federal oil shale lease tract C-a, Rio Blanco County, Colorado. Manuscript on file. White River Resource Area, Bureau of Land Management, Meeker, Colorado.

Meehan, W.R., Swanson, F.J., and Sedell, J.R. 1977. Influences of riparian vegetation on aquatic ecosystems with particular reference to Salmosia fishes food supply. Technical Report pp. 137-145. U.S. Department of Agriculture, Forest Service.

Mehls, Steven F. and Carol Joe Carter. 1984. Colorado southern frontier historic context. Denver. Colorado Historical Society. National Academy of Sciences. 1993. Rangeland health: New methods to classify, inventory, and monitor rangelands. Committee on rangeland classification, Board on Agriculture, National Research Council. National Academy Press. Washington. D.C.

National Atmospheric Deposition Program (IR-7)/National Trends Network (NADP/NTN). 1988. Memorandum dated October 12, 1988. NADP/NTN Coordination Office, Natural Resources Ecology Laboratory, Colorado State University. Fort Collins, Colorado.

Nickens, Paul R., Signa L. Larralde and Gordon C. Tucker, Jr. 1981. A survey of vandalism to archaeological resources in southwestern Colorado. Cultural resource series number 11. Colorado State Office, Bureau of Land Management, Denver, Colorado.

Noxon, John S. and Deborah A. Marcus. 1981. Wild Fire induced cliff face exfoliation and potential effects on cultural resources in the Needles district of Canyonlands National Park, Utah. American Indian Rock Writing Research Co., Monticello, Utah.

Pedco Environmental, Inc. 1981. Colorado's climate, meteorology, and air quality. Prepared for the U.S. Department of the Interior, Bureau of Land Management, under contract No. YA-553-CTO-98, Denver, Colorado.

Platts, W.S. 1978. Livestock interactions with fish and their elements - a symposium summary. Technical report pp. 92-96. CAL-NEVA Chapter of the Wildlife Society, Sparks, Nevada.

Potential Petroleum Resources of Northeastern Utah and Northwestern Colorado, in 32nd field Conference Western Slope Colorado Duigebook. 1981. New Mexico Geological Society, 255-265 pp.

RCO Engineering Consultants, Inc. 1976. Flood plan information report, Gunnison River and Tomichi

References

Creek, Colorado. Government Publication.

Romer, Alfred S. 1966. Vertebrate paleontology, third edition, The University of Chicago of Chicago Press, Chicago, Illinois.

Rossillon, Mary P. 1984. The Curecanti Arch - ecological project. Anthropology, No. 9. Midwest Archaeological Center. National Park Service, U.S. Department of Interior, Lincoln, Nebraska.

Sanborn, A.F. 1971. Possible future petroleum of the Uintah and Piceance Basins and Vicinity, Northeast Utah and Northwest Colorado, in Cram, I.H., ed. Future Petroleum Provinces of the United Sates--Their Geology and Potential: American Association of Petroleum Geologists Memoir 15, Vol. 1, 489-537 pp.

Scanlon, A.H. 1983. Oil and gas fields map of Colorado. Colorado Geological Survey Map Series 22, scale 1:500,000.

Schumm, S.A. and D.I. Gregory. 1986. Diffuse - Source Salinity Mancos Shale Terrain, BLM Technical Note 373.

Scott, Douglas D. 1979. Don't burn that wickiup! A value at risk: Some considerations of cultural resources in fire management. Manuscript on file. White River Resource Area, Bureau of Land Management, Meeker, Colorado.

Society of Range Management. July, 1991. New directions in range condition assessment. Report to the Board of Directors Society for Range Management by the Task Group on Unity in Concepts and Terminology. North Platte, Nebraska.

Soil Conservation Service. 1984. Soil survey of the Rifle Area Colorado - Parts of Garfield and Mesa. U.S. Department of Agriculture.

Soil Conservation Service. 1982. National list of scientific names, Volumes 1 and 2. U.S. Department of Agriculture.

Soil Conservation Service. 1990. Soil Survey of Moffat County, Colorado. Interim Report. Unpublished. U.S. Department of Agriculture.

Soil Conservation Service. 1982. Soil Survey of Douglas-Plateau Area Colorado. Interim Report. Unpublished. U.S. Department of Agriculture.

State of Colorado. Sept., 1993. Colorado plants of special concern. Colorado Natural Heritage Program. Boulder, Colorado.

U.S. Department of Commerce. 1985. Climatological data - Colorado annual summary. National Oceanic and Atmospheric Administration, Environmental Data Service, Asheville, North Carolina.

U.S. Department of Interior, Bureau of Land Management. 1980. Grazing management program for the White River Resource Area, Final Environmental Impact Statement. U.S. Government Printing Office. Washington D.C.

U.S. Department of Interior, Bureau of Land Management. 1981. Coal amendment to the White River Resource Area Land Use Plan, Bureau of Land Management, Craig District Office, Craig, Colorado.

U.S. Department of Interior, Bureau of Land Management. 1981. Rangeland program summary for the White River Resource Area. Denver, Colorado.

U.S. Department of the Interior, Bureau of Land Management. 1981. Coal amendment to the White River Resource Area Land Use Plan, 62 pp., with 27 pp. appendix.

U.S. Department of Interior, Bureau of Land Management. 1991. Colorado oil and gas leasing development Final Environmental Impact Statement, Bureau of Land Management, Colorado State Office, Denver, Colorado.

U.S. Department of Interior, Bureau of Land Mangement. 1991. Colorado record of decision vegetation treatment on BLM Lands in thirteen western states.

U.S. Government Printing Office. Washington D.C.

U.S. Department of Interior, Bureau of Land Management. 1991. Final Environmental Impact Statement Vegetation Treatment on BLM lands in thirteen western states. U.S. Government Printing Office. Washington D.C.

U.S. Department of Interior, Bureau of Land Management. 1993. Technical Reference 1737-9 Riparian area management process for assessing proper functioning condition. U.S. Government Printing Office. Washington D.C..

U.S. Department of Interior, Bureau of Land Management. 1994. Rangeland reform '94 draft Environmental Impact Statement. U.S. Government Printing Office. Washington D.C.

U.S. Geological Survey. 1987. Water Resources and valuable minerals of the Piceance Basin, Colorado: The challenges and choices of development, USGS professional paper 1310, U.S. Government Printing Office, Washington, D.C.

U.S. Geological Survey. 1974-89. Ecological survey. Water resource data colorado. Volume 2, Colorado River Basin.

VanLiew and Gesink. 1984. Assessment of Groundwater Resources of Alluvial Aquifer, White River Valley, Colorado. USGS WRIR 84-4307

References

Wallace, Steven M. 1989. A paleontological survey of State Highway 139 between mile posts 54-8 and 66.3, South of Rangely, Rio Blanco County, Colorado. Colorado Department of Highways, Denver, Colorado.

Wallestad, Richard. 1975. Life history and habitat requirements of sage grouse in central Montana. Technical Report, Chapter, Life History. Montana Fish and Game Department, U.S. Department of Interior, Bureau of Land Management.

Warner, Heimes, Middelburg. 1984. Groundwater Contribution to the Salinity of the Upper Colorado River Basin. USGS WRIR 84-4198

Weeks, and others. 1974. Simulates Effects of Oil Shale Development on Hydrology, Piceance Basin, Colorado. USGS PP908

Witherbee, K. 1990. Potential for occurrence and development of oil and gas in the White River Resource Area, BLM Mineral Report. 1990a. A cultural resource inventory of the shavetail access road upgrading in association with Chandler and Associates' southwest Rangely 2-1 location, Rio Blanco County, Colorado. Centuries Research, Inc., Montrose, Colorado.1990b. A cultural resource inventory of Chandler and Associates' southwest Rangely 4-17 location, Rio Blanco County, Colorado. Centuries Research,Inc., Montrose, Colorado. 1990c. A cultural resource inventory of Chandler and Associates' southwest Rangely Federal 2-1 Well, Rio Blanco County, Colorado. Centuries Research, Inc., Montrose, Colorado.1990d. A research design and proposed treatment plan for prehistoric properties discovered during construction of access roads in Chandler and Associates' southwest Rangely lease area, Rio Blanco County, Colorado, in 1990. Centuries Research, Inc., Montrose, Colorado.

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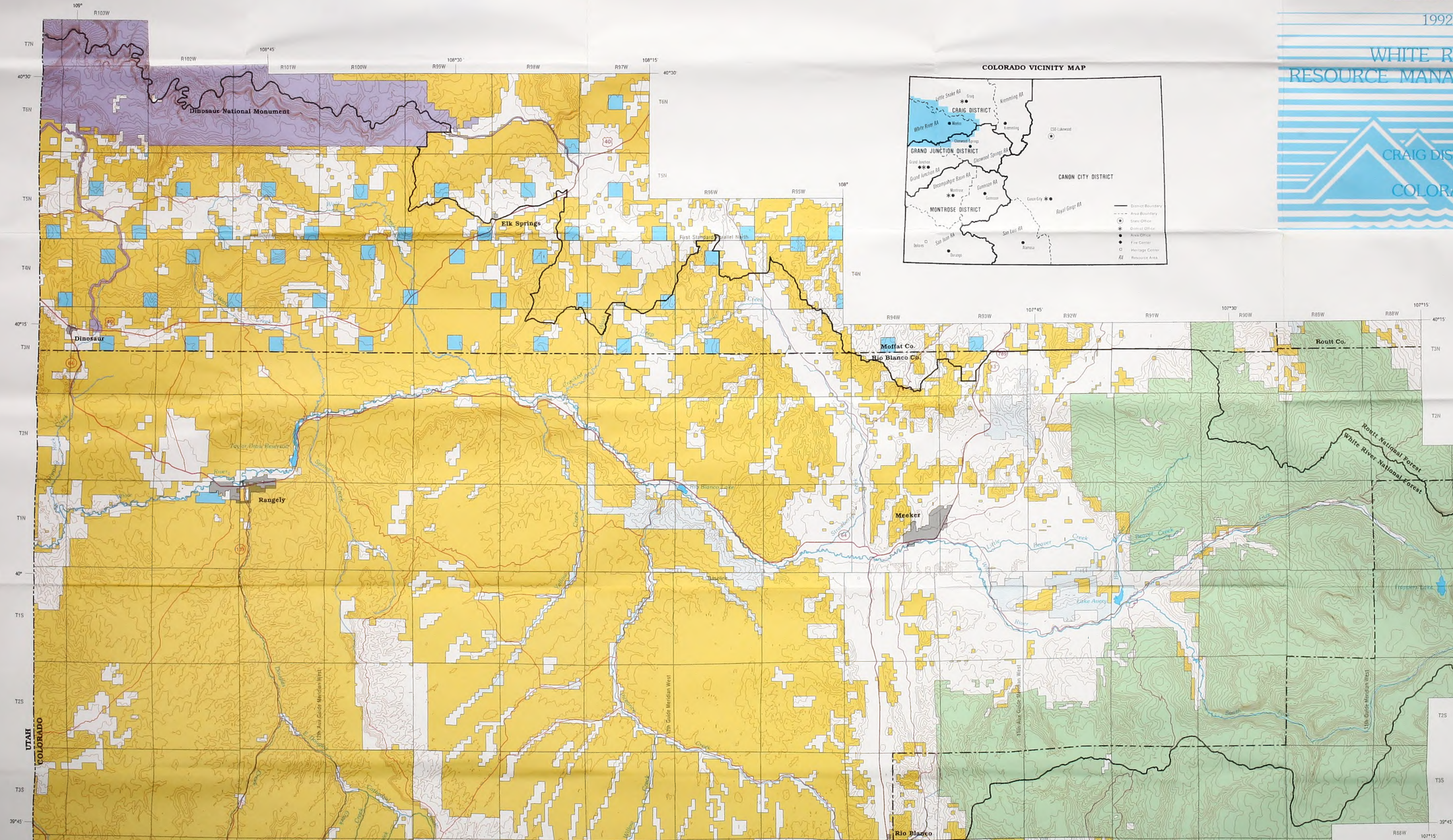
WHITE RIVER RESOURCE MANAGEMENT PLAN

CRAIG DISTRICT

COLORADO

COLORADO VICINITY MAP



Dinosaur
Rangely
Meeker
Rio Blanco
Moffat Co.
Rio Blanco Co.
Routt Co.
Rio Blanco Co.
Garfield Co.
Routt National Forest
White River National Forest
Naval Oil Shale Reserve
Rifle Gap Reservoir
Trappers Lake
Lake Avery
Yellow Creek
Taylor Draw Reservoir
Douglas Creek
Little Beaver Creek
Beaver Creek
Piceance Creek
Wolf Ridge
Wolf Creek
Willow Creek
Crooked Wash
Deep Channel
Danforth Hills
Jensen
Blue Mountain
Moosehead
Cathedral
White River
Sixth Principal Meridian
First Standard Parallel South
6th Principal Meridian West
11th Aux Guide Meridian West
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BUREAU OF LAND MANAGEMENT
LAND STATUS LEGEND

- Public Lands (Administered By Bureau of Land Management)
- National Monument
- National Forest
- Department of Energy
- State Lands
- Colorado Division of Wildlife
- Patented Lands
- Resource Area Boundary
- Federal and State Highways
- Other Major Roads
- 200 Foot Contours

SCALE 1: 200,000

1 0 1 2 3 4 5 6 7 8 9 10 miles

GEOGRAPHIC REFERENCE AREAS

- Blue Mountain / Moosehead
- Wolf Ridge / Red Wash
- Crooked Wash / Deep Channel
- Danforth / Jensen
- Piceance
- Douglas / Cathedral
- White River

Bureau of Land Management

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